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BLUE JAY

December 1979

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PAUL F. BRUGGEMANN, 1890-1974

HARLES D. BIRD, Department of Biology, University of Calgary, Calgary,
lberta, T2N 1N4.

The Canadian National Collection f Insects, located at Agriculture anada's Biosystematics Research nstitute in Ottawa has a large ollection of butterflies and moths ollected in Alberta near Lloydinster, and in Saskatchewan near arlan, by Paul Bruggemann from 938 to 1949. These specimens, and ose collected by Dick Fitch in the ame general area, have made the epidoptera of this region better nown than that of most other areas in est-central Canada.

Paul Bruggemann was born on 28 ebruary 1890 at Gut Mindenerwald, emeinde Hille, Westphalia, Gerany. His father was the prosperous wner of a box factory. Paul grew up an area of meadows, forests and ountains and soon developed an inrest in, and love of, natural history. e received his formal education in ermany and graduated in echanical engineering. Especially trigued with airplanes, he once flew th one of the Wright Brothers.

Though reticent to talk about the eriod during and after the First orld War, Bruggemann was known have served as a motorcycle spatch rider who later investigated rplane crashes. His parents and ly brother died either during or ortly after the war and the family rtune was also lost during this riod.

Paul emigrated to Canada from nzig in the fall of 1926 and settled Lloydminster, Alberta. His English s poor to begin with and he worked e first three years as a farm bourer. He spent one winter alone in a small cabin in the bush northeast of Lloydminster, making a special study of English and the Scandinavian languages. Later he established a small business repairing automobiles and farm machinery, often traveling from job to job in a 1927 Chev. He had a reputation of being rather slow but sure and thorough in his work, able to fix just about anything and to "make do" if parts were not available.

Paul lived for a number of years during the early thirties on the farm of Ronald Charles Craigie, a refined English bachelor, in the Rivercourse area (NE34-47-1-W4), 14 miles south and west of Lloydminster. He later moved a short distance to a house on the Sunnydale District school grounds and lived there until 1949.

It is not certain why he became interested in butterflies and moths but it is likely that his scientific curiosity was piqued through discussions with Dick Fitch, a local farmer who by then was collecting seriously. At any rate he apparently started collecting in the Sunnydale area in 1938 and soon was gathering material from farther abroad. Specimens in the Canadian National Collection are also from Cold Lake, Primrose Lake, Frog Lake, Prairie Lake, Big Gully, Streamstown, Lloydminster, Blackfoot Hills, Blackfoot Coulee, and Battle River, all in Alberta; and from Onion Lake and the Harlan area in Saskatchewan. By 1940 he was devoting less time to mechanics and more and more to collecting. Mrs. May Johnson mentioned that he often visited her parents in the Harlan district. He would stay for days at a time, and night would see him set off for moths

Paul Bruggemann at Eureka, Ellesmere Island. Reprinted from Arctic 18 (2), p. 133.
S.D. MacDonal

with his Coleman lantern and white sheet. He would slip into bed long after every one was asleep and would be up early the next morning looking over and mounting his catch of the night before. He soon had a collection of several thousand beautifully prepared specimens and became increasingly active in identification and in correspondence with authorities of the Canada Department of Agriculture. He was also a contributor to Kenneth Bowman's "Annotated Lis of the Lepidoptera of Alberta."

In the spring of 1949 he eagerl jumped at the chance to act as summer assistant of the Norther Insect Survey. This involved collectin insects, plants, and gathering natura history information around Dawson i the Yukon. On his return he accepte a full-time position with the Survey i Ottawa. The following years saw hi processing specimens during the winter and collecting during the summer. In 1950 he was at Repulse Bay on Melville Peninsula. In 1951 he worked out of Alert on northern Ellesmere Island with Stewart D. MacDonald from the National Museums of Canada. In 1952 he was at Mould Bay on Prince Patrick Island. In 1953 and 1954 he was at Eureka on Ellesmere Island where he carried out a two-year study of musk oxen for the Canadian Wildlife Service in addition to gathering insects and botanizing. He did not, however, carry out a cherished desire, that of spending a winter on Ellesmere Island. His plant collections, amounting to over 1000 exceptionally well prepared sheets, were sometimes of great interest and one, a grass, *Puccinellia bruggemanni*, was new to science and was named after him. He attended meetings of the Lepidopterists' Society in New York City in 1950 and at the Chicago Natural History Museum in 1951 and presented a paper on "Butterfly collecting 500 miles from the North Pole" at the latter meeting.

In 1954, at the age of 65, Paul changed jobs and was hired for two years as Secretary of the International Type-figuring Plan of the International Union of Biological Sciences. This involved the photographing of type specimens of insects.

In 1956 he attended the Tenth International Entomological Congress and presented a detailed summary paper on "Insects and environments of the High Arctic." At the age of 67 Paul accepted the position of Editor of *Arctic*, the Journal of the Arctic Institute of North America, and held this office until July 1, 1964. He had the reputation of being meticulous and of setting very high standards. He moved from Ottawa to Montreal on May 1, 1958, and lived there until retirement at which time he moved back to Ottawa. Paul then worked in a freelance capacity for the foreign language section of the Government Translation Bureau and translated papers into English from German, Russian, French, Norwegian, Swedish and Portuguese. He continued working until shortly before his death on August 18, 1974.

From the early sixties until 1972 Paul made a trip every summer back to the Yukon and Alaska. He traveled in a VW and carried camping gear with him. On his way back he regularly stopped to visit Mrs. May Johnson and her family for a week or so to rest before journeying on to Ottawa.

Nora Corley aptly described him as being "a sensitive, shy, dedicated person, popular with his colleagues, and a good friend to those who were fortunate enough to be taken into his confidence." Paul did not leave behind a family as he never married but he will be fondly remembered by many.

Mrs. May Johnson, Mrs. Cecily Sutcliffe, Dr. Stewart MacDonald, Dr. Eugene Munroe and Dr. Bernard Boivin kindly supplied helpful details for this account.

Publications

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BRUGGEMANN, P. F. and J. A. CALDER. 1953. Botanical investigations in northeast Ellesmere Island, 1951. Can. Field-Nat. 67:157-174.

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He also contributed to the Field Season Summaries of the Lepidopterists' Society for 1948, 1949, 1950 and 1951.

AN INVASION OF FOREST TENT CATERPILLARS

EVELYN M. CASSON, Box 11, Medstead, Saskatchewan, S0M 1W0.

My farm buildings are situated in a thick growth of poplars (mostly trembling aspen), with an undergrowth of hazelnut, rose, high bush cranberry, alders, and some saskatoons, chokecherry and pin cherry. Last year I noticed that some of these trees, at some distance from the yard, had lost their leaves through the spread of the forest tent caterpillar, but the caterpillars did not come near the buildings. This spring, however, I began to notice trees closer home with their leaves stripped. Walking out from the yard one day, I came across a poplar with its trunk thick with small, black caterpillars crawling upward. I rushed home for the spray gun and sprayed the tree trunk as high as I could reach, but on looking around I saw that all the trees nearby were covered with the caterpillars. Then I realized it would be of no use to try to spray by hand.

About 12 June I began to see caterpillars coming into the yard. At first there were only a few, which I dispatched as quickly as possible, but the trees and shrubs in the yard soon began to lose their leaves, until all were quite bare. By 15 June, the woods were full of rapidly growing caterpillars, eating voraciously and crawling everywhere. I sprayed and sprayed to keep them off the flower beds and vegetable garden. They began crawling up the walls of the buildings, and would manage to creep up a foot or so on the slippery siding of the house before falling down again. Others followed and fell on top of those below, and soon there heaps of them, some dead and others alive. On 19 June, I hauled away seven wheelbarrow loads and poured gasoline on them to burn them.

By this time, leaves and blossoms around the yard were all eaten. The crabapples, mountain ash, rose bushes, willows, Russian almonds and cherries were mere bare sticks where a week before they were beautiful in full leaf and bloom.

In the front yard were two large Manitoba maple trees. The caterpillars moved into them, but did no eat the leaves. Instead, they climbed up the trunks and branches and then began to fall to the ground where they piled up in heaps. A total of 20 wheelbarrow loads were hauled away.

On 20 June, a plane was hired to spray. The spray killed hundreds o caterpillars, but more and more came. It was horrible to walk unde the trees as there were webs a around and caterpillars were dropping everywhere. As we looked westward through the denuded forest a sunset, the trees appeared to be draped in a beautiful silken veil. Thei branches were black with clustered caterpillars and looked like huge black snakes writhing up into the air

On 22 June, the plane sprayed again, and now we began to feel tha the caterpillars would be going into the cocoon stage. There were stil hundreds underfoot as one walked i the yard, and the wheels of cars driving in could be heard crunching ove them. By the end of June, the caterpillars were going into the pupa stage

ent Caterpillars R.E. Gehlert

nd the trees and bushes across the ountry were loaded with their white, uzzy cocoons.

Ten days to two weeks later the tan- oloured moths began to emerge, nd early in the morning the poles of e yard lights would be covered with oths resting in the warm sunlight. his was a boon for the busy little arn swallows and sparrows with milies of nestlings to feed.

Now, where the trees had stood are and gray, a soft green tint began show, as if spring was just begin- ng. Sure enough, new baby leaves ere opening, and soon the forest as green again. Now on 14 eptember the maple leaves (which ere not eaten by the caterpillars) are turning yellow and beginning to fall, but the young poplar leaves are still green and no sign of ripening and changing colour is seen. This probably means that the leaves have not matured.

The eggs of the forest tent caterpillar are laid in bands around the branches of the trees and these should be cut open in the late fall when the leaves have fallen.

As an outbreak of these caterpillars can last from three to six years we will probably be visited by them again next year. So let us hope that we have plenty of flesh flies, the major parasite which preys on the forest tent caterpillar.

EUPTOIETA CLAUDIA IN MANITOBA

WALTER KRIVDA, Box 864, The Pas, Manitoba.

Klots in his *Field Guide to the Butterflies* mentions that *Euptoieta claudia* is scarce even in Minnesota. He was evidently unaware of its occurrence in Manitoba.

Most of my collecting experience is centered at The Pas, Manitoba where I have collected intensively since 1950. I took *Euptoieta claudia* early in my collecting here. Then, as now, it is a sporadic catch dependent on how strong the spring migration of female *Euptoieta claudia* was from the south.

The species evidently cannot over winter here as an adult and there may well be a return migration southward—yet unrecorded—resembling the monarch in this regard.

Euptoieta claudia is evidently widely distributed in Manitoba but its range is yet unknown. It may extend a long way northward as native violets of various species reach tree-line and beyond. The number of frost-free days may be the determining and restricting factor. It has tropical affiliations and its close relative *Euptoieta hegesia*, is common enough in Mexico. This may be an additional clue to the idea that all butterflies were originally tropical and radiated into other areas of the planet with time, food and parasite pressures, and climatic changes allowing for survival of adaptive genes. Summarily it can be said that *Euptoieta claudia* is a migrant into our area from the southern United States. Battered females arrive in the spring on the prevailing south winds in an apparently small migratory phase. They lay eggs on wild violets or evidently, more commonly on garden pansy. The pupal period is brief (as in the Tropics) and a larg Manitoba-produced form emerges i July. A hot summer will produce nic specimens as far north as The Pa Cool moist summers tend to produc larger and darker forms. I hav specimens going back to the mid 1950's that tend to illustrate this.

During the early 1960's I was Par Naturalist at Riding Mountain Nationa Park with headquarters a Wasagaming, Manitoba. In the cours of routine work various butterfl observations were made—includin positive evidence that *Euptoiet claudia* breeds in Manitoba.

Excerpts from my field notes follow

Wasagaming, Manitoba
July 20, 1964

"Today at the Forestry Nursery Statio watched a female *Euptoieta claudia* la eggs on garden pansy plants. Also nearb I found two second instar larvae on ve small pansy seedlings. They have tw tufted horns at the front and are varie gated brownish. They rested parallel t one another. The female, while laying placed the eggs singly one to a pans seedling. She was rather battered and I di not have the heart to collect her, engage as she was in motherhood, an America invention. These larvae should produc adults in 3-4 weeks time. This is the firs time that I have seen the species laying.

Wasagaming, Manitoba
July 23, 1964

"Today, near the Information Office i the Park, I saw a very large, fresh an darkish looking specimen of *Euptoiet claudia*. This must have come from th earliest laid eggs—perhaps in early June There is thus an apparent overlap i appearance of fresh specimens on th wing."

asagaming, Manitoba
ugust 7, 1964
"On August 2, 1964 I found an *Eup-*
ieta claudia like larvae eating pansies in
flower window box of the bunk house in
wn. This was in its last instar. It pupated
ugust 4. I am not certain that this is *Eup-*
ieta claudia, so am eagerly awaiting its
nergence. If it is *Euptoieta claudia* this
ill confirm my idea that there is a final
nallish terminal brood on the wing at the
nd of August and running into early
eptember. This is the last brood and is
haracteristically smaller. Some large
pecimens taken at The Pas in July 1956
dicate the larger summer generation.
his small form possibly does not occur at
he Pas in the autumn."

Wasagaming, Manitoba
August 14, 1964

"Emerged in the afternoon a good specimen of *Euptoieta claudia*. The specimen and pupal case preserved. Pupal period: 12 days."

Wasagaming, Manitoba
August 16, 1964

"Today I saw a large, fresh *Euptoieta claudia* at the window box where the pansies are grown. It moved too swiftly to determine the sex. It flew 30 feet straight up and over the building and was away."

The above data is likely the first on the biology of this butterfly species in Manitoba. Its sporadic appearance and infrequent capture may have precluded previous observations on its biology.

rost crystals *Fred. W. Lahrman*

A PRELIMINARY STUDY OF VEGETATION ZONES AND WINTER BIRD DISTRIBUTION IN SASKATCHEWAN*

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The distribution of winter birds varies considerably across the 11 degrees (and 1220 km) of latitude that encompass present day Saskatchewan. This latitudinal spread includes vegetation zones that range from short-grass prairie through deciduous and coniferous forests, to the sub-arctic transition. Comparative information on bird composition among these vegetation zones in all seasons is sparse. The best information for the early winter period is provided by 946 Christmas Bird Counts conducted from 1940 to 1976.

In an earlier analysis of Christmas counts, bird distribution maps based on geographic units (degree blocks) suggested that the frequency of occurrence of most species was markedly influenced by vegetation zones.[5] [6] In this paper we use these counts to assess apparent preferences for specific vegetation zones exhibited by the more regular species, and characterize the species composition of each zone.

Methods

We assigned each count locality to one of the vegetation zones recognized in the *Atlas of Saskatchewan* (see Figure 1).[7] In addition to these six vegetation zones, we have included the Cypress Hills region as a seventh zone since it has several unique physiographic and vegetational features. Only one count (Fort Walsh has included extensive mixed wood forest typical of the upper elevations of the hills. However, counts a Eastend, Maple Creek, Piapot and Skull Creek are likely under the influence of the hills because they include streams and their associated riparian habitats that originate in the Cypress Hills; hence, these localities have been included in the Cypress Hills region.

We then calculated the frequency of occurrence, during count period for each species within each zone (i.e., the percent of total counts recording the species). Forty-six common species are shown in Figure 2 Given this information, it was possible to obtain an index of species richness within each zone (Table 1).

The index used is the number o species recorded on more than 25% of the counts. We felt that, with the modest degree of coverage on most counts, all of these species likely would be recorded on at least half o the counts had the count circles been covered by larger numbers o observers (20+) as in the larger cities

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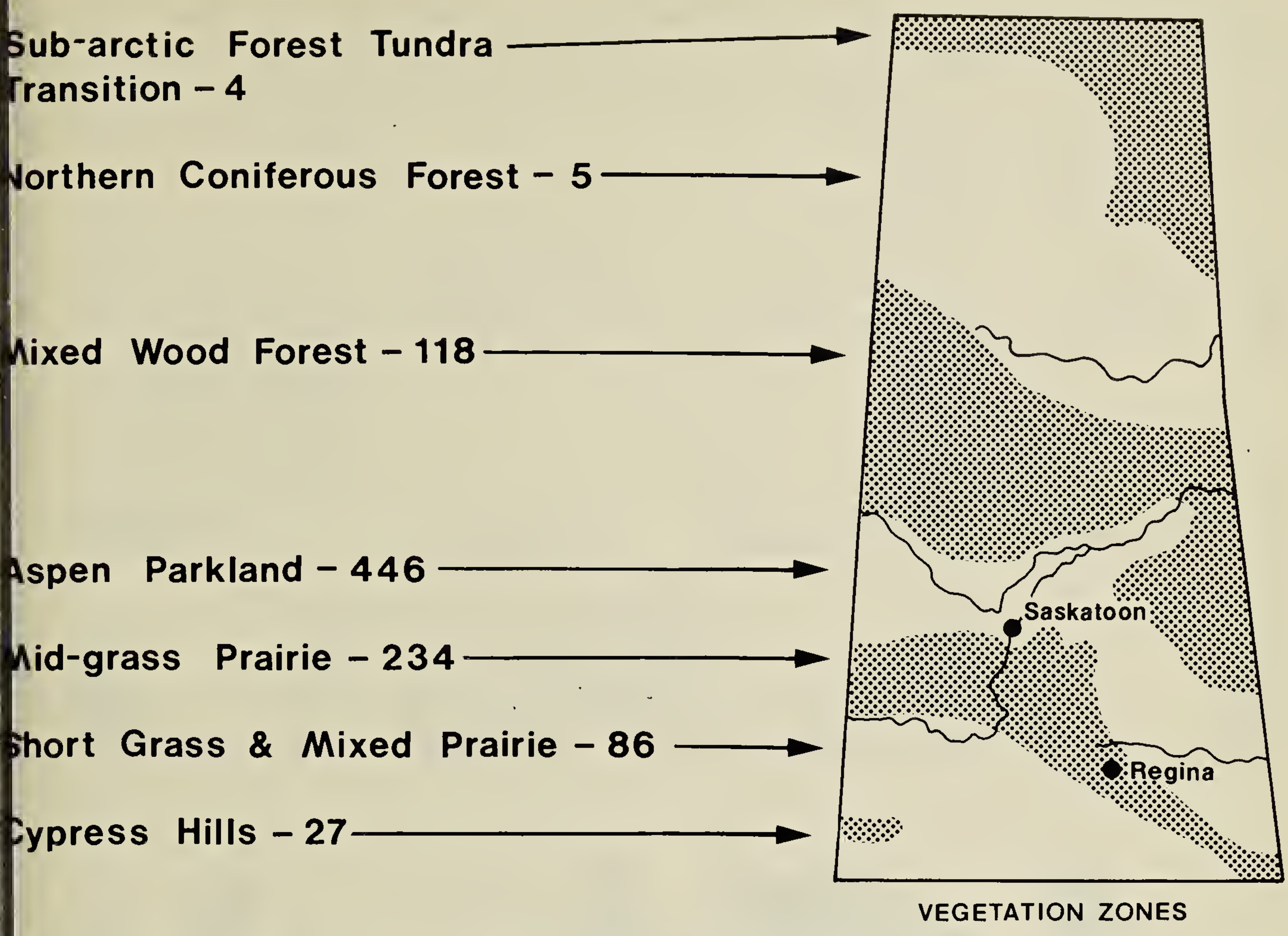
* Part II of a 35 year review of Christmas Bird Counts in Saskatchewan. Part I appeared in the December 1977 *Blue Jay* 35:224-239.



gure 1: Vegetation zones in Saskatchewan (adapted from Richards and Fung 1969). e total number of counts in each vegetation zone is given behind the name of the zone.

esults

The highest species richness was xhibited by the Cypress Hills region hich had an index of 22 species. The ort Walsh count, located in the West ock of the Cypress Hills, has been e only locality other than Saskatoon nd Regina where more than 30 pecies have been recorded in a ngle day. Twenty-one of the 46 pecies represented in Figure 2 were corded at least as frequently in the ypress Hills as in any other vegeta- on zone.

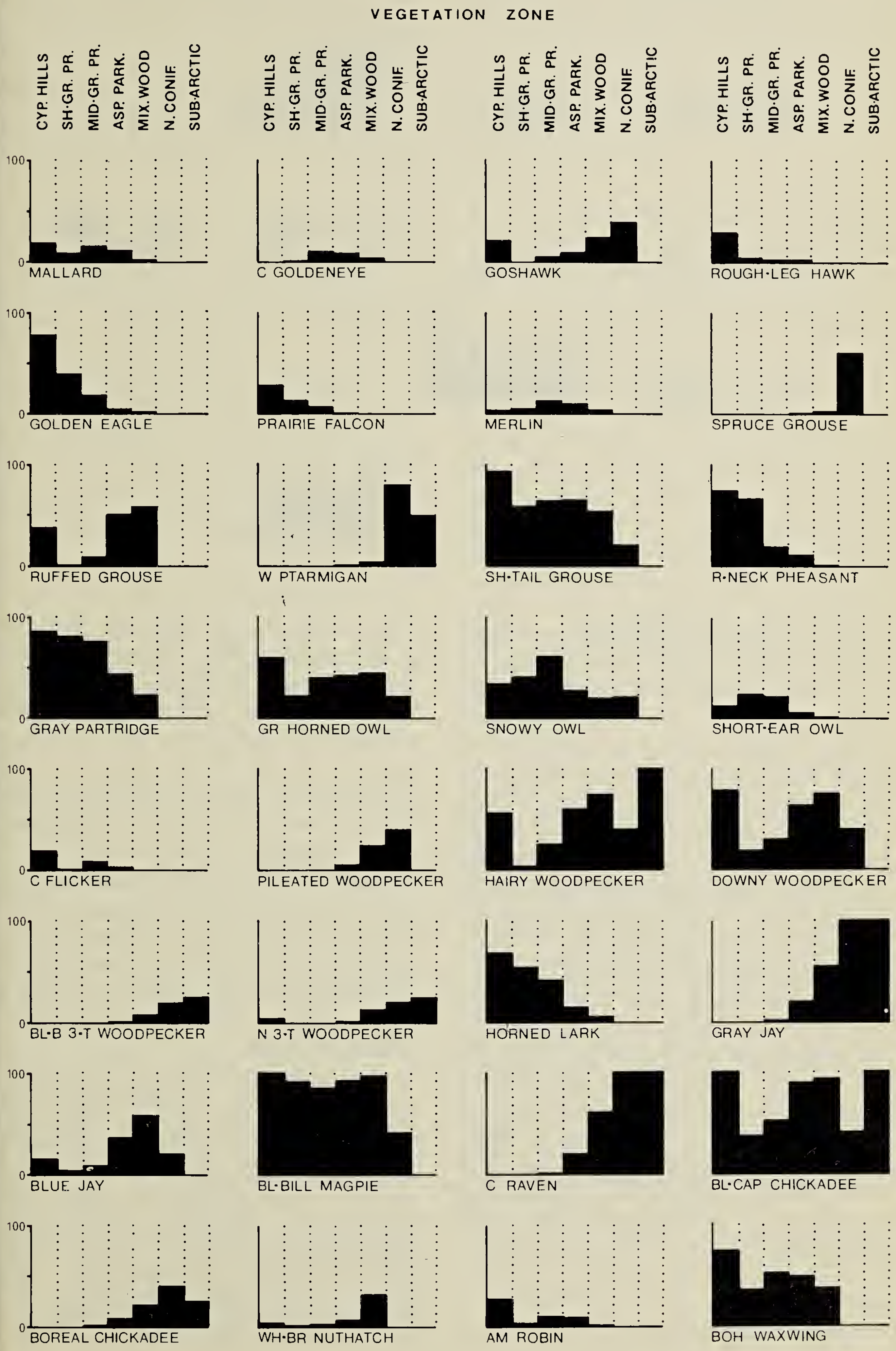
Somewhat lower species richness as exhibited by the aspen parkland nd the mixed wood zones, each with index of 17 species. There are merous examples of small parties these areas recording relatively ood counts. In 1952, four people in o parties observed 25 species on unt day and three other species during count period in the Nipawin-Fishing Lakes area on the aspen parkland/mixed wood boundary. In 1954, five observers recorded 17 species on count day and 13 additional species during count period in the Nipawin-White Gull Creek area. And between 1951 and 1976, two people frequently recorded 20 to 25 species during count period at Somme, a farming community on the southern edge of the mixed wood forest.

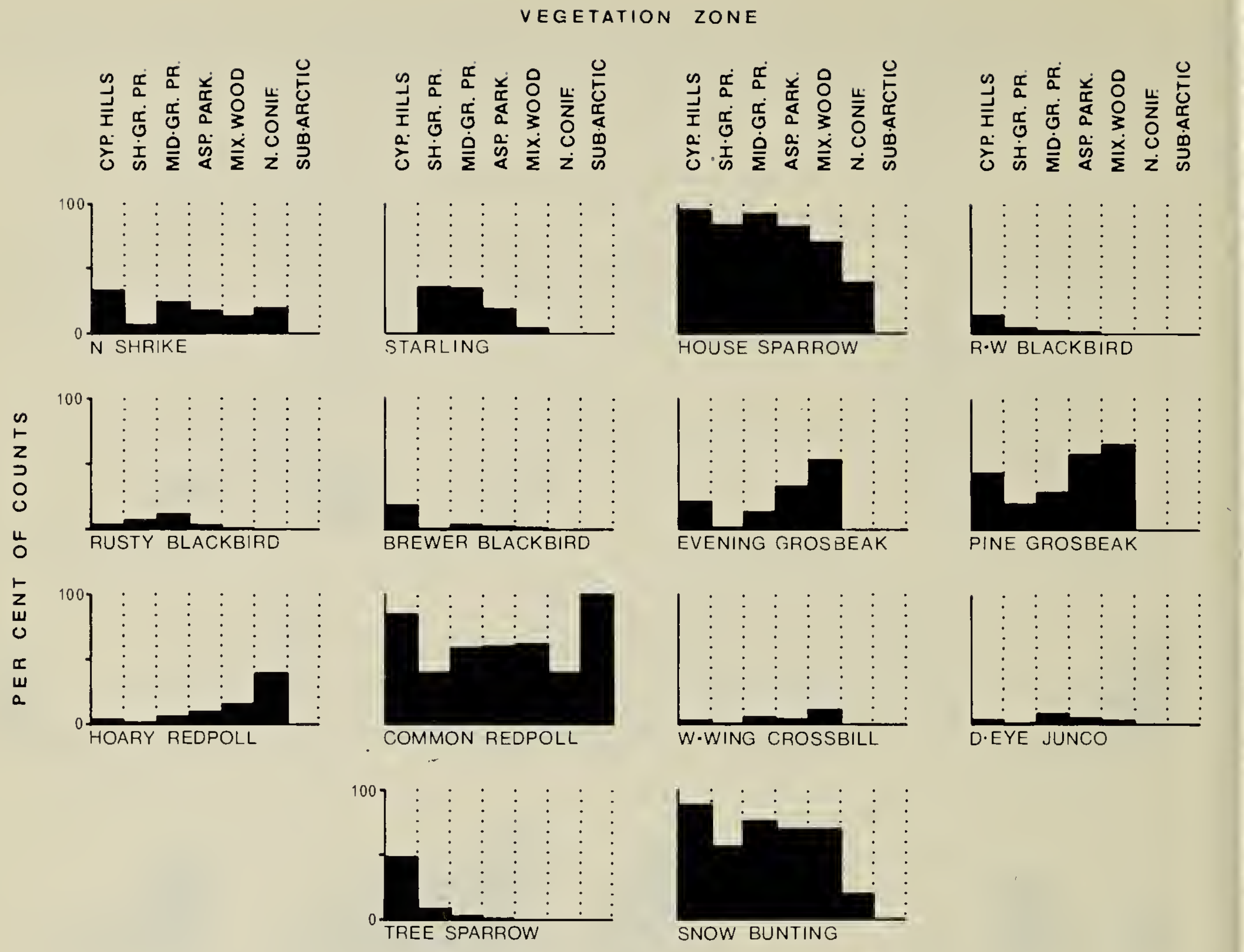
Species richness appeared to be lowest in the sub-arctic forest tundra transition, the northern coniferous forest and in the prairie zones. Although the number of counts in the first two of these zones has been small (5 and 4, respectively), the small number of species observed is in general agreement with the depauperate winter bird life reported for these areas by others.[2] [4]

TABLE 1. Frequency of occurrence of species on Christmas bird counts in major vegetation zones, 1942-1976 (based on 920 counts). Species are ranked in descending order of frequency.

Frequency of Occurrence	Cypress Hills	Short-grass and Mixed Prairie	Mid-grass Prairie	Aspen Parkland	Mixed Wood Forest	N Coniferous Forest	Sub-arctic Forest Tundra Transition
76 - 100% of counts	Bl-bill. Magpie Bl-c. Chickadee House Sparrow Sh-tail. Grouse Snow Bunting Gray Partridge Com. Redpoll Golden Eagle Downy W'pecker	Bl-bill. Magpie House Sparrow Gray Partridge	House Sparrow Bl-bill. Magpie Snow Bunting	Bl-bill. Magpie Bl-c. Chickadee House Sparrow	Bl-bill Magpie Bl-c. Chickadee	Gray Jay Com. Raven W. Ptarmigan	Hairy W'pecker Gray Jay Com. Raven Bl-c. Chickadee Com. Redpoll
51 - 75% of counts	R-n. Pheasant Boh. Waxwing Horned Lark Gr. Horned Owl Hairy W'pecker	R-n. Pheasant Sh-tail. Grouse Snow Bunting Horned Lark	Gray Partridge Sh-tail. Grouse Snowy Owl Com. Redpoll Bl-c. Chickadee Boh. Waxwing Rock Dove	Snow Bunting Sh-tail. Grouse Downy W'pecker Hairy W'pecker Com. Redpoll Pine Grosbeak Ruffed Grouse	Downy W'pecker Hairy W'pecker House Sparrow Snow Bunting Pine Grosbeak Com. Redpoll Com. Raven Ruffed Grouse Blue Jay Sh-tail. Grouse Gray Jay Evening Grosbeak	Spruce Grouse	
26 - 50% of counts	Tree Sparrow Pine Grosbeak Ruffed Grouse N. Shrike Snowy Owl R-leg. Hawk Prairie Falcon Am. Robin	Rock Dove Golden Eagle Snowy Owl Com. Redpoll Bl-c. Chickadee Starling Boh. Waxwing	Horned Lark Gr. Horned Owl Downy W'pecker Starling Pine Grosbeak	Boh. Waxwing Gray Partridge Gr. Horned Owl Blue Jay Evening Grosbeak Rock Dove Snowy Owl	Gr. Horned Owl Boh. Waxing Wh-br. Nuthatch	Pileat. W'pecker Hairy W'pecker Downy W'pecker Bl-bill. Magpie Bl-c. Chickadee Bor. Chickadee House Sparrow Hoary Redpoll Com. Redpoll	W. Ptarmigan
Total No. Species In All Above Categories	22	14	15	17	17	13	6

igure 2: Frequency of occurrence of species on Christmas Bird Counts (during count eriod) in seven vegetation zones. The Rock Dove and all species recorded on less than 0 per cent of counts in all vegetation zones are excluded.





Ten of the 34 species in Table 1 were seen on more than 25% of the counts in only one vegetation zone. Five of these 10 restricted-distribution species were in the Cypress Hills (Tree Sparrow, Northern Shrike, Rough-legged Hawk, Prairie Falcon, American Robin), four were in the northern coniferous forest (Spruce Grouse, Pileated Woodpecker, Boreal Chickadee, Hoary Redpoll) and one was in the mixed wood forest (White-breasted Nuthatch). Only two species, Black-capped Chickadee and Common Redpoll, were included in the index for each of the vegetation zones. The Black-billed Magpie and House Sparrow were indexed in six of the seven zones (not in sub-arctic), and the Hairy Woodpecker was seen in all seven zones but was seen on more than 25% of the counts in only five zones.

Discussion

Within the province, the frequency of occurrence of species on Christmas counts differs among vegetation zones. This is probably at least in part a function of the habitat diversity present in each zone. The number of habitats in an area depends upon both the natural environment and the nature and extent of man-induced environmental changes. As long as human activities do not destroy the last examples of any natural habitat, areas modified by human activities would provide a much greater variety of habitat types in which an artificially high degree of species diversity would exist.

In recent years the greatest number of species has been consistently recorded on Christmas Bird Counts in the two largest cities, Regina (located in the mid-grass prairie) and Saskatoon (located on the fringe of the aspen parkland). In the 10-year period, 1967 to 1976, Regina averaged 39 species and Saskatoon averaged 34 species during count period.

Saskatoon, with a river, and Regina, with a man-made lake, both provided open water during the winter. Open water was a factor explaining the local diversity of birds in these areas. This was especially evident at Regina where a maximum of 19 water-associated species and an average of 12 such species were recorded; at Saskatoon a maximum of 8 and an average of 4 species were recorded.

When water-associated species are excluded from each year's total, Saskatoon averaged 30 species and Regina averaged about 27 species during count period. The total at Saskatoon is similar to some of the higher counts taken by smaller numbers of people in typical areas of the parkland, mixed wood or Cypress Hills vegetation zones. The unexpectedly high total for Regina is perhaps attributable to the large number of observers, compared to other localities in the same vegetation zone, and the relatively great diversity of micro-habitats afforded by an "island" of woodland on the otherwise largely treeless plain.

On a broader scale, one could suggest several obvious reasons for the large number of species recorded on individual counts and the higher species index found in the Cypress Hills, aspen parkland and mixed wood zones. The Cypress Hills and aspen parkland naturally encompass habitats ranging from grassland to forests. The mixed wood component of the Cypress Hills forest provides habitats for additional species not regularly found in aspen parkland. The area is a meeting place for species which have both boreal affinities (e.g., White-winged Crossbill, Goshawk, Northern Three-toed Woodpecker) and montane affinities (e.g., Townsend's Solitaire, Red Crossbill, Gray-crowned Rosy Finch) as well as being a prime wintering area for the more typical prairie species. Most of the boreal and montane species are still infrequently recorded (and hence absent from Table 1); however, as more counts in the Cypress Hills include the extensive mixed wood habitats of the Centre and East Blocks, these species will no doubt become increasingly regular.

The natural diversity of the Cypress Hills and aspen parkland have been further modified by agriculture and other cultural influences. Most counts in the mixed wood zone have been taken along its southern boundary where agricultural practices have resulted in clearing of a part of the forest cover, thus providing openings for species that formerly may have had to travel further south to find suitable winter range (e.g., Snow Bunting). There, as in other more southerly vegetation zones, the presence of farms and towns, with their associated food supplies, have provided yet another micro-habitat which wintering birds have learned to exploit.

Climatic patterns within Saskatchewan probably exert both direct and indirect effects on the number of species that winter in various parts of the province. Climate is an important determinant of the vegetation zones which, in turn, influence species richness. Temperature also affects the distribution of many species through effects on food supplies and energy requirements. With a mean January temperature varying about 22°C. (40°F.) latitudinally across the province,[7] temperature may determine the limits at which a given species is able to balance its energy requirements with the available food resources, taking into account the north-to-south variation in daylight available to diurnal species.

The small number of species

observed on the prairies is probably the result of the combined effects of low vegetation diversity and exposure. Studies have shown that, even for hardy species like the Snowy Owl and Starling, wind chill significantly increases the energy requirements of the bird.[1] [3]

The wintering bird species of the primeval prairies undoubtedly included fewer species than are present today, since introduced species—primarily the House Sprarrow, Gray Partridge and Rock Dove—are now among the most conspicuous winter birds. There is no evidence that any naturally-occurring species have been seriously displaced by introduced species. The growing number of species now occurring locally in southern Saskatchewan (particularly in towns and cities) attest to the new "richness" of these areas.

Summary

The number of species recorded on more than 25% of counts in each of the seven vegetation zones (i.e., "species richness") was highest in the Cypress Hills, aspen parkland and mixed wood zones, where a high degree of natural and man-induced habitat diversity now exists. Species richness was lower in the northern coniferous forest, the mid-grass prairie, and the short-grass/mixed prairie. Within the mid-grass prairie and aspen parkland vegetation zones, counts in cities invariably recorded the largest number of species; contributing factors included the availability of open water, a great variety of man-induced habitats (including concentrated natural and artificial food and shelter) and usually more observers.

Acknowledgements

We wish to thank many persons whose valuable assistance was required for the completion of the first two parts of this 35-year review of Christmas bird counts. Durand Edgett assisted in the initial collating and checking of the information and during the preparation of the distribution maps. Herb Copland, David R.M. Hatch, Larry A. Patterson and C. Eric Tull commented on early drafts of the manuscript. C. Stuart and Mary Houston contributed generously to all aspects of this project. We especially wish to thank Michael S.W. Bradstreet, Kerry J. Finley and W. John Richardson who offered many ideas on methods of analysis and presentation; and J. Bernie Gollop for his exhaustive editorial comments. Lynn Wright, Irene Reinson and Heather Craig typed several drafts of the manuscript. The technical support provided by LGL Ltd.—environmental research associates is greatly appreciated.

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FIRST WORM-EATING WARBLER FOR SASKATCHEWAN

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On 19 May 1979, a Worm-eating Warbler was seen in Saskatoon. This is the first recorded in Saskatchewan and probably the first for western Canada. Identification was certain by the four people who saw it: Mary Houston, Jim Slimmon, Geoff Galloway and the writer.

It was first seen scatching with both feet at once in leaf litter under shrubs. Later it was seen very clearly perched on a water bowl and photographed. It also searched for food in low shrubs and in wet soil along the fenceline. During the two hours, 1215 to 1415, it was present in our yard and neighbouring yards it was not seen more than about two metres above the ground.

At one point Geoff Galloway saw it apparently catch something large on the ground and carry it a few centimetres into a young pine tree. It gulped twice but still had part of the food hanging from its bill. It looked like a robin eating a worm with difficulty. I looked through 8X40 binoculars and saw what seemed to be the distal end of an earthworm in the bill. The distance was 12 metres.

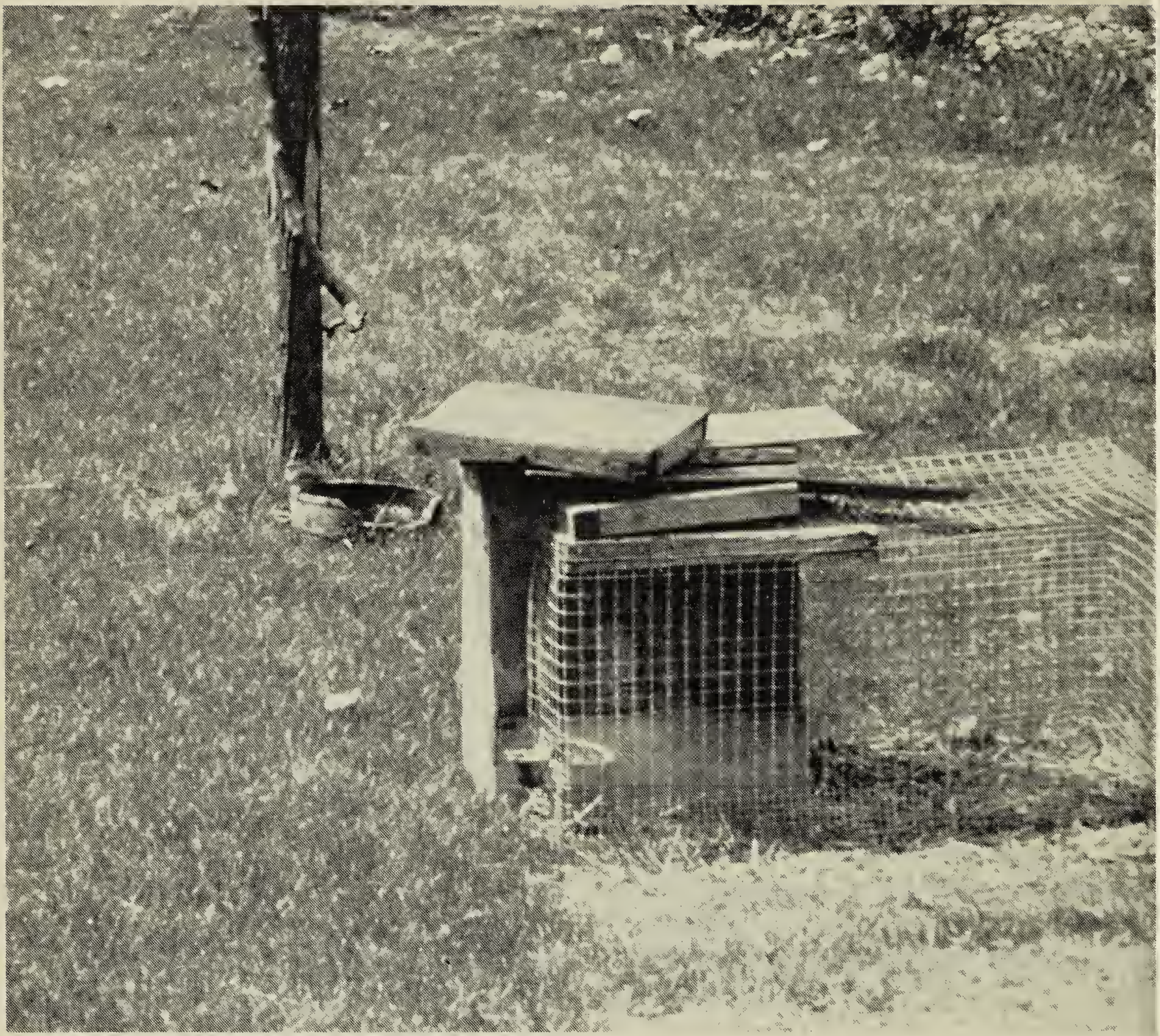
The interesting point here is that Worm-eating Warblers are rarely reported eating earthworms. Armyworms, other caterpillars and insects are the chief food.[2] [14] The bird's scientific name translated means "worm-eating worm-hunter," which is misleading.

Description

All four people who saw the Worm-eating Warbler agreed there was nothing else it could be. We were using various binoculars and Jim Slimmon had a small telescope. Books consulted at the time included Birds of Canada,[6] Birds of North America[12] and several field guides.[4] [8] [9]

There were no tail spots, wing bars or breast markings, just four longitudinal dark stripes on the head, the lower pair being through the eyes. The bill was pinkish brown and the feet were pink toning into pinkish brown legs. The back was a bright olivaceous buff, the wings browner, the sides were washed with a glowing russet buff; the head between the dark stripes was light olive buff; and the underparts were light yellowish buff. The total effect was of muted colour not drabness. It did not match any of the book plates in colour. Possibly it was in winter plumage. Ridgway[10] says that adults in winter are more richly coloured and that legs and feet in dried skins are pale yellowish brown but more flesh coloured in life. This may account for the variety of leg and foot colours given in literature and plates.[2] [3] [6] [10] [11] Godfrey states that the bill is large for a warbler. The sexes are alike.[2] [10]

Because of the leaf-scratching behaviour, striped head and pinkish legs my initial reaction to the bird, before reaching for binoculars, was that it was a "small, wrongly-coloured White-crowned Sparrow"! It looked only a little smaller than a nearby Ovenbird and was possibly about 12



Worm-eating Warbler on waterbowl, 19 May 79 *Geoff Galloway*

cm long.

This unusual visitor was not heard singing. Its song resembles a Chipping Sparrow.

Distribution

There do not appear to be any records of its coming so far west and north before. Godfrey lists it as a casual spring visitor to Canada in extreme southern Ontario (in 1908; 1960; banded 1961).[6] It is not listed in the Blue Jay Index 1961-1969[7] nor 1970-1978, (in preparation; pers. comm. from Mary Houston). The A.O.U. Checklist (1957) gives this warbler as casual in s. Ontario with no other mention of Canada.[1]

Peterson's Western Field Guide gives it only two lines in his section on accidental and marginal species.[8] However, in his eastern guide the breeding range is given as "Connecticut to n. Illinois . . . s. to n. Georgia and Missouri with Central America and the West Indies as wintering areas."[9] The breeding range is extended more recently west to eastern Kansas and Texas[2 11] and possibly southern Nebraska.[2] It is a casual spring migrant (nine records) in Minnesota[5] where there is also one fall record for 1974.

Was this a rare visitor or could the

Worm-eating Warbler be extending its range to the northwest? Do any readers know of recent unpublished records from the Dakotas?

Speculations

An inconspicuous ground-nesting warbler with a song strongly resembling the Chipping Sparrow could go unnoticed, especially if it occurred outside its normal range. It would take a really alert birder's ear in late May or June to pinpoint birds on territory and see them. He would also need to wonder why the familiar wood-edge, city-shade-tree chippy was out of its habitat and in low hillside shrubs and brush. Apparently the warbler is often silent in July and early August during the moult, but sings in late August and early September.

It is a bird with preferences for rocky and shrubby hillsides, watercourses and young deciduous saplings.[2] So it may be no coincidence that the city yard where it was found, after rain, is close to the South Saskatchewan River and has deciduous scrub around the edges. It is usually visited by Ovenbirds and Northern Waterthrushes on migration.

Conclusion

An immigrant naturalist like myself has few preconceived ideas about the limitations on likely species because so much is new to the observer anyway. Consequently I was pleased that established birders Mary Houston (with a flat tire) and Jim Slimmon (without lunch) were able to come and confirm this sighting before the bird left. Also I am very grateful to Bernie Gollop for making reference material available to me and ensuring that the account was written up while freshly remembered.

What I find hard to believe is that this was the only individual of the species that migrated into Saskatchewan this year. Perhaps there is a case for Saskatchewan birders actively to look and listen for Worm-eating Warblers, especially in Spring.

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RECENT NESTING OF THE CASPIAN TERN AT EGG ISLAND, LAKE ATHABASCA, ALBERTA

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In 1952 approximately 20 pairs of Caspian Terns were discovered nesting with California and Herring Gulls on what is now known as Egg Island in Lake Athabasca in northeastern Alberta.[9] [10] [11] That was the first documented nesting site for this large tern in Alberta.

Since 1952 there have been no accounts published of the status of the Caspian Terns on Egg Island. Neither Salt & Wilk nor Salt & Salt reported more recent nesting.[10] [11] [9] In fact, the former seemed to indicate that 1952 was the only year when nesting was reported. For the period 1961 to 1970, Sadler and Myres reported of the Caspian Tern: "no recent breeding records from Alberta."[8] We conclude that since 1952 the breeding status of the species in Alberta is unknown.

On 15 June 1977, we flew to Egg Island to collect California Gull eggs for toxic chemical analysis and also to document the current status of the Caspian Tern on the island.

We arrived at the island by float plane at 1345; California Gulls, Herring Gulls and Caspian Terns were immediately obvious. The terns were congregated near the centre of the island, on the area of highest elevation and directly below and surrounding a navigational tower (see photo). A systematic search by DVW revealed 47 Caspian Tern nests in that area; a total of 59 Caspian Terns were counted on and around the island. Most tern nests contained two eggs; some had one, others three. The nests were mere scrapes (depressions) in the loose cobblestone substrate and had no nest material. Before we left the island (at 1420), DVW estimated a maximum of 100 pairs of California Gulls. Their nests were distributed primarily to the south of the tern nests on less elevated areas. We counted only nine Herring Gulls on the island and located only one active nest. It was on the southeast portion of the island.

Egg Island is elliptical (with the long axis oriented NW-SE), and approximately 70 m long. Its highest point, approximately 2-1/2 m above lake level, is just NW of the centre, where a tall, metal navigational tower is located. The island is devoid of herbaceous vegetation except for a small patch of shrubs (species undetermined) near the SE end. The entire surface of the island consists of fist-sized, gray cobblestones. Several partially obliterated terraces were visible on the island, undoubtedly the work of wave and ice action over the years.

When we flew over Egg Island at approximately 100 m on our initial approach, we found it hard to see

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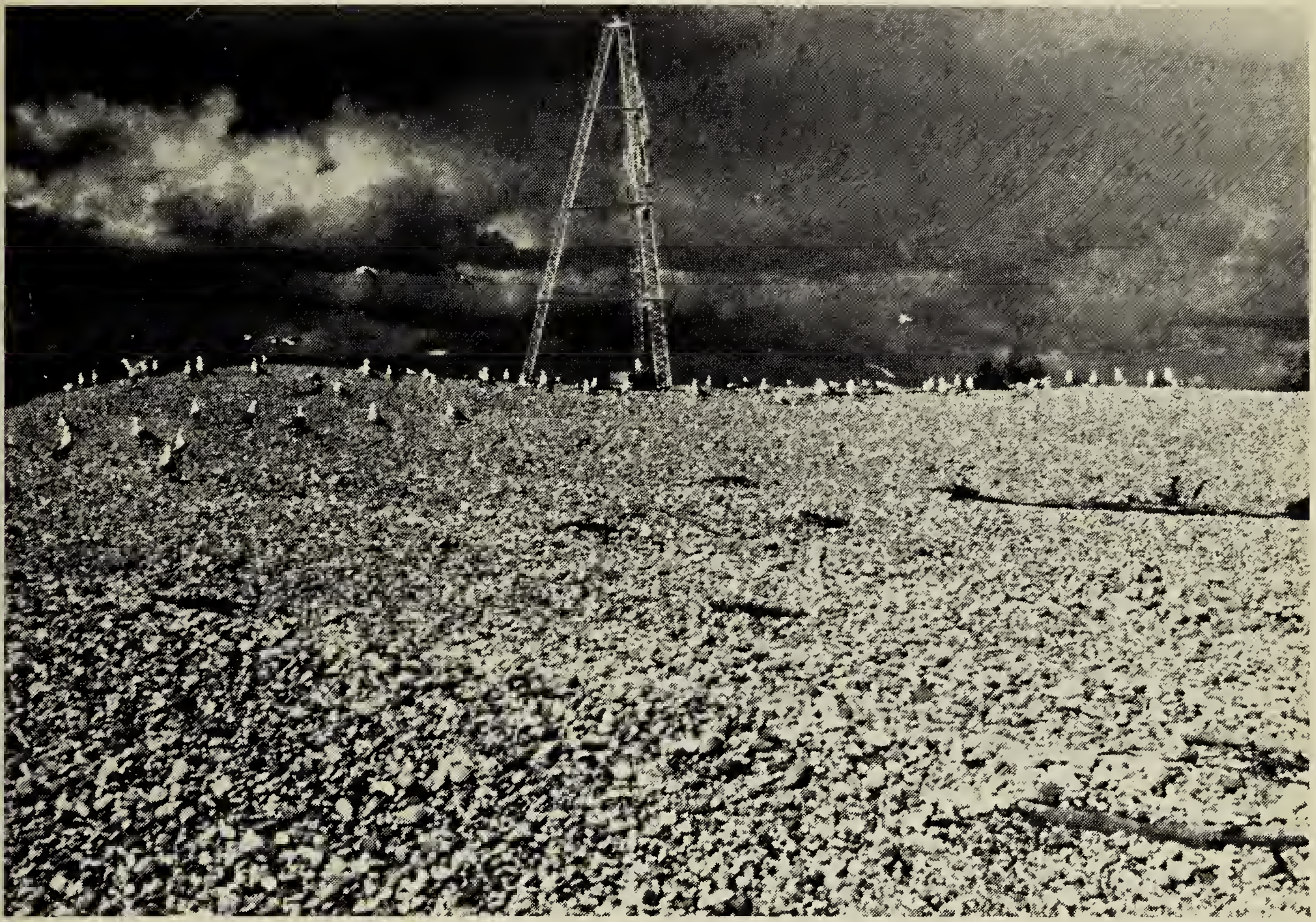

Egg Island, Lake Athabasca, Alberta. Caspian Terns nest beneath and to the right (east) of the tower.

Chip Weseloh

gulls or terns sitting on the island; neither of us were sure that we had seen any! On our departing pass over the island we still found it difficult to locate individual birds that we knew were there. They blended almost perfectly with the cobblestones.

The history of the Caspian Tern in Alberta prior to 1952 is sporadic, but overwhelmingly indicates that the bird was most commonly seen in the Lake Athabasca area. Preble recorded several birds at the Lake Athabasca Delta on 2 June 1903.[6] Seton recorded it ". . . but once in the Delta" on 4 June 1907 and speculated that "This seems to be one of its breeding stations."[12] Soper gave sight records for the Delta in late May, 1932 and 28 June 1933.[13] In southern Alberta, Taverner speaks of only occasional sight records on the Prairie Provinces and neither Farley nor Rand observed the bird.[15 2 7]

Of his initial discovery of the nesting colony at Egg Island, B. Wilk writes (in *litt.*),

> ". . . the date of my visit to the island . . . was 18 June 1952. On that date two specimens were taken—one a female off a nest and the other an adult male, from the size of the testis it was a non-breeder. If I remember correctly the birds had eggs at the time.
>
> "The island at the time was known as Burntwood Island—I well remember the terraces and the bleak appearance of the island but it seems to me that there was some plant covering, laborador tea, etc.
>
> "The reason I went to the island was to confirm a sighting by one of the early explorers—perhaps Preble. I believe I was the first to report the nesting. I'm sure there weren't 47 nests when I was there. I would venture a guess of perhaps about 25."

Since 1952, records of Caspian

Terns have been less sporadic and more widespread. Stirling listed the Caspian Tern as an occasional migrant in the Calling Lake area prior to 1955.[14] Two individuals were seen at Beiseker on 2 April 1958.[4] Single birds were reported at Medicine Hat on 9 August 1967 and at Cold Lake on 12 July 1968.[8] [1] For the period 1969-1972, Hohn regards it as a fairly rare summer visitant in the Peace-Athabasca Delta and as a breeding summer resident in the Lake Athabasca Region.[3] In the 1970s additional sight records have been made during migration along the Athabasca River north of Ft. McMurray (R. Palindat, personal comm.), in the Rocky Mountains near Kananaskis (M. McNicholl, personal comm.) and in southern Alberta.[5]

In contrast to the increase in reports of Caspian Terns in southern Alberta since 1952, reports on the status of the nesting colony in Lake Athabasca have been few. O. Hohn visited Egg Island on 2 July 1971 and reported (in *litt.*),

> "Caspian Terns were nesting. Some nests still held eggs, most of them 1, 2 or 3 downies. I estimated there were a little over 20 pairs of terns and 50-80 pairs of California Gulls which were also nesting—downy young were seen."

O. Hohn also reported sight records on the south shore of the lake on 26 and 27 July 1971. A.R. Smith (personal comm.) flew over the island in early June and July of 1975 and photographed it. Large, white birds, evenly distributed as if on territory, are visible in the photograph (when viewed under a dissecting microscope) though they were not seen from the air. In 1976 G.R.A. Ebel (personal comm.) working in western Lake Athabasca, frequently observed Caspian Terns but was unable to visit Egg Island.

Concerning the possibility of other Caspian Tern nesting colonies in the Lake Athabasca area, Ebel writes (in *litt.*),

> "There exists at least two colonies other than the Egg Island colony in the Peace-Athabasca Delta. One small colony of 8-9 pairs exists on the northwest shore of "Slough Lake" (local name Frezie Lake). This lake may be located east of the mouth of Jackfish Creek (Richardson Lake) across the Athabasca River.
>
> "The other colony is at Beartooth Island which is near the mid-west end of Lake Athabasca. There are approximately 30 pairs. The Indians have been taking eggs from this island for years."

Neither we, nor Ebel, have personal experience with these two colonies; Ebel learned of them from local people. Nor have we ever seen any other reference to them. These nesting areas remain to be confirmed.

In conclusion, we concur with O. Hohn (in *litt.*) on the status of the Caspian Tern on Egg Island.

> "My opinion is that it breeds annually on Egg Island and has almost certainly done so since at least the beginning of the century."

We believe that the failure to observe terns (or gulls) on the island during Smith's recent overflights was due to the superb camouflage of the birds against the island's surface.

We thank Martin McNicholl and Charles Dauphine for comments on an earlier version of this manuscript.

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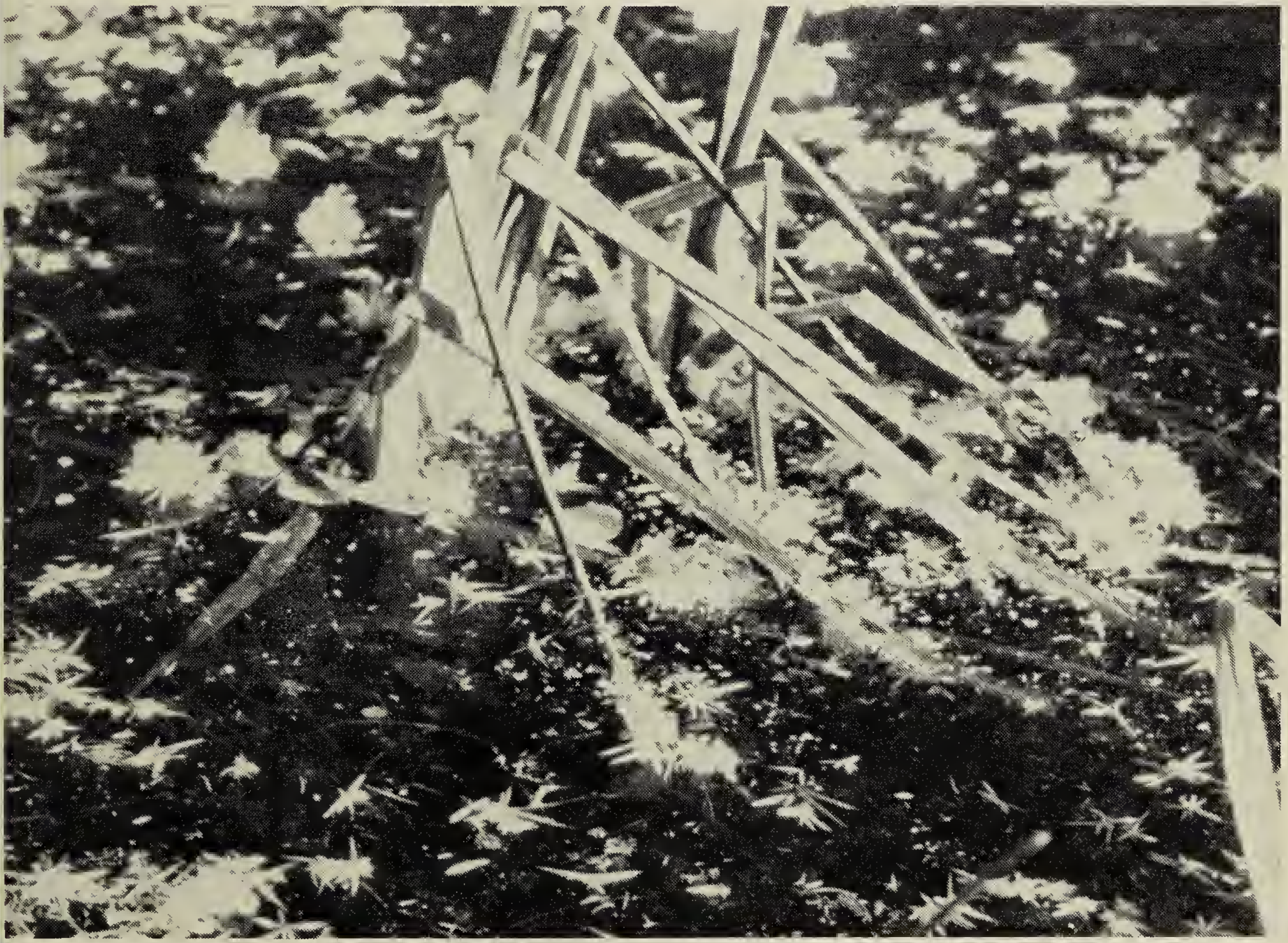

Frost crystals forming on ice. *Fred W. Lahrman*

SASKATCHEWAN'S PELICANS AND CORMORANTS IN 1978

KEITH RONEY, Saskatchewan Museum of Natural History, Regina, Saskatchewan, S4P 3V7.

An aerial censusing technique was employed to check the status of White Pelican and Double-crested Cormorant colonies in Saskatchewan in 1978. Eleven colonies with 12,279 pelican nests and 3,967 cormorant nests were censused. This indicated an increase for both species over 1976. This increase, however, was due largely to bias caused by the different survey method used. A standardized method is essential to remove these biases.

Disturbance is a factor that one must always be conscious of when dealing with delicate colonial-nesting species such as White Pelican and Double-crested Cormorant. It has been the major cause of decline in the number of pelican and cormorant nests at several colonies.[2 3 4 5 9] Therefore, when one engages in a study of these two species, techniques must be used which would eliminate disturbance or at least keep it as low as possible. Gull predation is constantly a problem but is enhanced when coupled with human disturbance. It has been stated "that cormorants appear to hold their own against the gulls except when disturbed from their nests by human visitors".[5]

However, when one is conducting surveys, the results are often difficult to compare those of other years if different survey methods are used. Sources of bias can include: 1. Different times of year; 2. Different times of day; 3. Different vehicles for survey, e.g., ground or air; 4. If aerial survey, was the data taken visually or from aerial photographs? If visually, what was the experience of the observers? If by use of photographs, what type of photographic technique and equipment were used? 5. If air survey, different altitudes; 6. Different weather conditions during the survey.

These are just a few of the possible biases but they give some idea of what must be kept in mind when conducting surveys in order to obtain as comparable counts as possible.

During the 1978 survey, a method was developed that could be standardized and used in the future by other researchers. Included was an aerial photography technique which is not new, but parameters for conducting the survey were established. Standardization would reduce and remove many biases. At the same time, this particular method would reduce the amount of disturbance and mortality of eggs and young caused by a ground survey.

Methods

Aerial photographs were taken of all but one of the colonies to determine the number of incubating adults and, thereby, the number of nests at each colony.

The aerial survey was conducted from 19 through 29 May. Survey time ranged from 0745 to 0915 (Central Standard Time) when colony activity, such as feeding and nest relief, are minimal.[7] This provides for easier recognition and calculation of incubating adults from the photos. Cessna 172's and 182's were used to fly the surveys and photographs were taken out the window using a handheld Pentax KX camera with 200 mm lens. Ektachrome color slide film (ASA 64) was used. All photos were

Nesting Pelicans at Old Wives Lake. *Keith Roney*

shot at 230 m (750 feet) above ground level. This altitude produced no disturbance to colonies. The Cypress Lake colony was checked from the ground as the island is large and hilly enabling one to land and make observations without disturbing the birds.

With a few revisions, this aerial survey method was previously used in Saskatchewan by Boeker who censused six pelican colonies in 1971 and by Trottier and Breneman who censused the Lavallée Lake colony.[1 8]

Counts were taken directly from the slides while viewing them under a compound microscope.

Results and Discussion

A total of 12,279 pelican nests at seven colonies were counted (Table 1). This number was more than double the 5,853 nests in 1976.[6] All colonies showed an increase with the exception of Redberry Lake, where the number of nests decreased from 89 to 72.

Eleven cormorant colonies were censused and they increased from 3,044 nests in 1976 to 3,967 in 1978.[6] As with the pelicans, most cormorant colonies showed increases (Table 1). Three colonies experienced a decrease: Kazan Lake suffered the most, dropping from 1,300 to 753 nests, while Quill Lake decreased from 267 to 72 nests and Redberry Lake from 29 to 24 nests. The 1976 figures included the nest data for Lavallée Lake in 1975.[8]

The significance of the large increase in the number of pelican nests is difficult to assess because of the bias created by different survey methods. In order to obtain a more accurate comparison of data with that of previous years, a standardized survey method should be established

TABLE 1 — Aerial counts of Saskatchewan pelican and cormorant colonies in 1978

Location	Date	Pelican Nests	Cormorant Nests
1. Cypress Lake*	May 21	—	395
2. Old Wives Lake	May 20	3,084	658
3. Last Mountain Lake	May 19	—	337
4. Redberry Lake	May 23	72	24
5. Quill Lake	May 19	232	72
6. Suggi Lake	May 29	913	579
7. Lavallée Lake	May 26	3,019	651
8. Doré Lake	May 27	—	270
9. Primrose Lake	May 27	4,007	124
10. Kazan Lake	May 27	952	753
11. Churchill Lake	May 27	—	104
		12,279	3,967

* Ground survey.

and used year after year with revisions made only as is deemed beneficial to increase the accuracy of the data.

Trottier and Breneman, in their study of the Lavallée Lake colony, presented some guidelines for conducting an aerial survey of pelican and cormorant colonies. In addition to the hours, altitude and camera equiment of the present survey, they also suggested: 1. Survey be conducted at peak of nesting period — usually around the first week in June. 2. Survey be conducted on bright sunny days to provide for better picture resolution.

The most important factors are time of year, time of day, and altitude of survey.

Acknowledgements

The assistance of Ben Rosser during the field survey was greatly appreciated. Thanks are extended to Mr. Bruce Wilson, Superintendent of Prince Albert National Park, for granting permission to survey the Lavallée Lake colony. The cooperation and assistance of Department of Tourism and Renewable Resources personnel was appreciated. Appreciation is also extended to the many pilots involved in the survey.

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GROUSE FLYING CRAZY AND DRUMMING HIGH

DENNIS FAST, Box 151, Kleefeld, Manitoba, R0A 0V0

I am writing in response to a rather interesting article on Ruffed Grouse "crazy flights" by Victor Friesen in the December, 1978, *Blue Jay*. As a result of our winter feeding program, we have had a lot of grouse activitiy in and around our backyard over the past 2 years. Unfortunately, i do not have so detailed a set of observations as Mr. Friesen, but I would like to make some general comments.

During the past 2 years, I know of at least seven grouse that have died as a result of smashing into our house, and another two that have lived to tell the tale. Of these nine incidents I have witnessed four. In most cases (six), the grouse hit windows; in at least two cases they hit the side of the house; and the other case was undetermined because we found the grouse dead near the house, but with no broken window in sight. In most of the cases that I observed (or saw the broken window evidence), the grouse hit the house at a height of about 2 m.

In one instance that I witnessed, the grouse seemed to be in pursuit of others. As they approached the house, the leading grouse veered off into the woods and disappeared. Unfortunately, the pursuing bird did not react in time, and hit the side of the house at top speed. It died almost instantly.

At the time of the above incident a year ago, our house was painted white. Mr. Friesen speculates that grouse may mistake a white house for a dull sky. During the past year, however, we have redone our house in natural (slightly brown) cedar, and the grouse are still hitting it!

On 12 January, 1979, at 5:13 p.m. (my observation have improved after reading Mr. Friesen's article), I heard a dull thud and looked up just in time to see a grouse rebounding from the side of the house and beginning to flutter away again. It flew about 4-5 m before settling in the snow to rest. There it sat for about 5 minutes before walking another 5-6 m into the woods. After several more minutes, it launched itself and disappeared above the trees.

This particular grouse, like the one a year ago, seems to have been attempting to manoeuvre between our house and the adjoining woodlot, a channel about 4 m wide. In the case of this year's grouse, however, it could hardly have mistaken our house for the sky; it seems rather to have misjudged its own ability to execute a banking curve in time to avoid the house!

My suspicions about the Ruffed Grouse's flying ability were intensified on 14 January, 1979. As the grouse moved in for their late afternoon feeding, I noticed several comical landings. In one case the grouse ended up half buried as it came to a "soft landing" by merely plunging into the snow. In another case, a bird flipped over and nearly tumbled head over heels as it attempted a similar landing in snow that was a bit harder. In any event, it would appear that the grouse has the kind of clumsy landing technique that would never get a would-be pilot his licence even if he lived to tell about it! And, as if that weren't bad enough, its flying style, too often, is not much better.

We live near Kleefeld, Manitoba, in a house that is nestled into mixed deciduous woods of aspen and oak. As a result, we see a fair number of Ruffed Grouse in and around our backyard. We encourage their winter presence by supplying them with crushed corn and peanut hearts, and it is not unusual for us to see 10 to 15 of these beautiful birds visiting our feeder at dawn and, especially, at dusk.

I'm sure that the winter feeding program encourages their year-round presence, and this enables us to witness the real treat of strutting and drumming males in full display.

A more unusual, but well-known behaviour, is that grouse will often drum in fall as well as in spring. However, it has been my observation that this fall drumming is usually less intense and not as persistent as the fever-pitched drumming of spring. It certainly is not an all-pervasive phenomenon, and I suspect that it may be the beginnings of the rites of spring for young males just beginning to "feel their oats" (or crushed corn, as the case may be)!

In any event, I have seen a male sitting on our feeding table in fall and drumming periodically over several days. This particular bird must have enjoyed the extra elevation (1 m) that the table provided for its drumming pronouncements.

This fall, however, our family witnessed what must surely be some sort of altitude record for a grouse's drumming perch. On 30 September, 1978, at about 8 a.m. I was awakened by the persistent drumming of a male Ruffed Grouse. Although I have heard this sound and witnessed the performance many times, it never fails to excite me and to arouse my curiosity. By this time our oldest boy, Stuart, age 11, had also heard it and made his way downstairs to check it out. In a few minutes came his excited shout, "It's on the roof!"

Needless to say, I was out there in a hurry. I could hardly believe my eyes, but on the very peak of the roof of our 1½ story house (8-9 m high) sat a male Ruffed Grouse. Over the course of the next 75 minutes I saw him drum repeatedly with almost the same intensity and regularity (every 3-5 minutes) as in the spring. The day was sunny and warm without a cloud in the sky — maybe Indian Summer makes fools of grouse!

I am wondering now whether this is an isolated case; or is there any other record of a grouse drumming in an unusual location or at such a remarkable altitude? If you know of any, I would be delighted to hear about it.

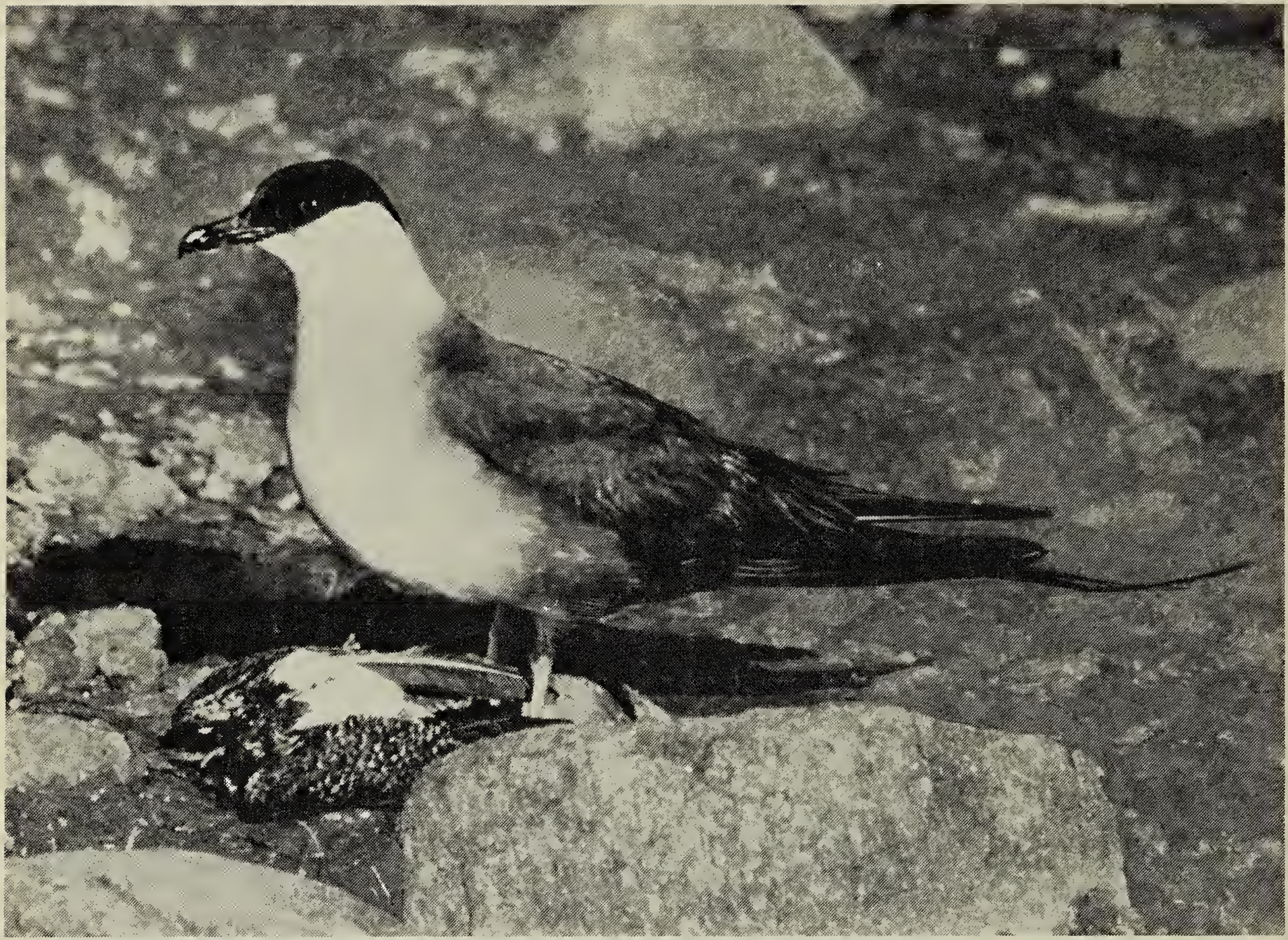
Editor's Note: Ruffed Grouse "have been known to drum during every month of the year and during every hour of the day and night". Drumming is most intensive from early March to early May but "there is also a short period in mid-autumn when this activity increases for a few weeks". "In the absence of appropriate, prostrate logs, mossy mounds or boulders; stone walls, rail fences, or similar objects are sometimes used for the stage". From: F. C. Edminster. 1947. The Ruffed Grouse. MacMillan, New York. 383 pp.

Long-tailed Jaeger *Dick Dekker*

LONG-TAILED JAEGER PREYS ON LESSER YELLOWLEGS

DICK DEKKER, 3819 - 112a Street, Edmonton, Alberta, T6J 1K4.

On 11 September 1977 I observed a Long-tailed Jaeger resting on a stone along the north shore of Beaverhill Lake, some 60 km east of Edmonton. When the jaeger flew, it flushed several waders and twice chased a lesser Yellowlegs that narrowly escaped by dropping into the water. Some distance away, the jaeger landed on the rock-strewn shore. As the low afternoon sun was behind it, I walked up to get the light at my back for a better look. Before I got there, the alarm reactions of yellowlegs and other waders prompted me to scan the shore through binoculars. I discovered the jaeger not far away, sitting in shallow water, flapping its wings for balance and pecking at something under it. At that moment, a violent squall sprang up, sending waves crashing onto the shore. The jaeger rose and flew against the wind to rest on the lake. I left to take shelter in the car, returning after the storm had abated, some 30 minutes later.



Long-tailed Jaeger with Lesser Yellowlegs *Dick Dekker*

Again alerted by the alarm calls of fleeing waders, I scanned the area and once more found the jaeger sitting in shallow water, flapping its wings and occasionally pecking at something underneath it. I walked up slowly, but the jaeger left long before I got there. While I was searching for the exact spot where it had been, the bird suddenly returned and settled close-by. It began hacking away at what I found to be a freshly-killed Lesser Yellowlegs. Part of the neck and breast had been eaten; the skull was plucked and bare.

Presently, I found the jaeger along the shore where it had been pecking just prior to the storm. Again, it was feeding on a Lesser Yellowlegs.

The next day the jaeger was flushing waders in the same area. It moved in and out of view among reed beds. Eventually, I found it sitting on an expanse of mud, eating its third Lesser Yellowlegs, that it had no doubt just captured and killed. The bird was not shy at all and allowed me to approach to about five metres.

It was my first sighting of the Long-tailed Jaeger at Beaverhill Lake, where I have recorded well over 100 unidentified and Parasitic Jaegers over the past 15 years. My records for the years 1964 to 1967 were published in the Blue Jay of March 1968, Vol. 26:16-17.

Ed. note: Remains of dowitchers, Bar-tailed Godwits and smaller shorebirds were found in the pellets of Long-tailed Jaegers in Alaska but there was no indication as to whether they were taken alive or as carrion (Maher, W.J. 1974. Ecology of Pomarine, Parasitic and Long-tailed Jaegers in northern Alaska. Pac. Coast Avifauna 37. 148 pp.).

PASSERINES FEEDING FROM FLOATING VEGETATION

MARTIN K. McNICHOLL, Beak Consultants Ltd., 3530 11A St. N.E., Calgary, Alberta T2E 6M7.

Recently Sealy reported several incidents of finches foraging from floating vegetation during autumn migration in Manitoba and Saskatchewan.[6] He cited similar observations from Great Britain, and in North America both Sharp-tailed and Song Sparrows had been reported previously as feeding from floating vegetation (see Bent *et al.* 1968:805, 1532).[1] Madge also included two African passerines among birds using floating vegetation as a feeding platform in Zambia.[3] Several additional observations, all from Manitoba, suggest that several passerines may use such temporary floating structures as vegetation and ice as feeding platforms not only in autumn migration, but also in spring and during the breeding season.

On 16 May 1967 I watched a Lincoln's Sparrow repeatedly run out from a stream bank on to floating stems of cattail (*Typha* sp.) in a ditch in the Delta Marsh, gleaning insects from the surface of the water on each foray. These observations lasted approximately 20 minutes and were repeated at the same location on the following two days.

During the breeding seasons of 1968 and 1969 I watched Yellow-headed Blackbirds of both sexes forage daily on floating rafts of *Scirpus acutus* on an open bay in Delta Marsh, which I named "Forster's Bay" after terns breeding there.[4] The blackbirds spent periods of 15 to 30 minutes foraging in this manner throughout the day, and at least some individuals appeared to gather most of their food during these forays.

J.P. Goossen and I also have spring observations of warblers in Manitoba feeding from sheets of ice, and similar behaviour has been reported for waxwings in Alberta.[2 5]

Thus, several passerines use temporarily available floating structures as feeding platforms. In addition, they may use such structures as perches for insect hawking, as indicated by Sealy's observation (pers. comm.) of an Eastern Phoebe apparently hawking insects from floating vegetation in backwater of the Assiniboine River in Winnipeg on 16 April 1976.

J.C. Barlow, Spencer Sealy and two anonymous referees made helpful suggestions on an earlier, longer version of this note. This constitutes Publication No. 24 of the University of Manitoba Field Station (Delta Marsh).

[1] BENT, A.C. and Collaborators (O.L. AUSTIN, JR., ed.). 1968. Life histories of North American cardinals, grosbeaks, buntings, towhees, finches, sparrows, and allies. U.S. Natl. Mus. Bull. 237.

[2] KERR, W.G. 1976. Bohemian Waxwing behavior. Calgary Field-Nat. 7:240.

[3] MADGE, S.G. 1972. Palaearctic wader migrants using floating vegetation as a feeding platform. Bird Study 19:172.

[4] McNICHOLL, M.K. 1971. The breeding biology and ecology of Forster's Tern (*Sterna forsteri*) at Delta, Manitoba. M.Sc. Thesis, Univ. Manitoba, Winnipeg.

[5] McNICHOLL, M.K. and J.P. GOOSSEN. In press. Warblers feeding from ice. Wilson Bull.

[6] SEALY, S.G. 1977. Northern finches feeding from floating vegetation. Condor 79:278-279.

UNSUCCESSFUL NESTING ATTEMPT OF THE SNOW GOOSE ON THE RED RIVER AT WINNIPEG, MANITOBA

PETER N. BOOTHROYD and PATRICK L. RAKOWSKI, Canadian Wildlife Service, 501 University Crescent, Winnipeg, Manitoba R3T 2N6

On 21 May 1978, as D. Wright was canoeing on the Red River just south of St. Norbert (in Winnipeg), he spotted the head of a goose amongst the surrounding willows. Upon closer inspection, the bird was found to be a blue-phase Snow Goose, sitting on a hastily-constructed nest. The nest did not resemble the large, well-constructed bowls typical of goose nests. It consisted only of a scrape in the ground surrounded by willow vegetation and was situated approximately 20 feet from the water's edge. The goose flushed, revealing 5 eggs.

On May 25, we set out by boat to observe the goose and nest for ourselves. As we approached the location where the bird had been seen previously, we caught sight of a goose in flight. A number of photographs were obtained using a Konica TC camera equipped with a 200mm lens and a 2X teleconverter. Upon arrival at the reported nest location, we went ashore and began looking for the nest. Extensive searching failed to locate it. We settled ourselves on the opposite shore of the river a few hundred feet upstream and waited for the goose to reappear. A short while later, the goose flew overhead, crossed the river and disappeared from view in the vegetation at the nest site. We went to where we had last seen the bird and when we were about 30 feet from the shore, it flushed from low-lying land, where it had been sitting, which jutted out slightly into the river. Again we searched in vain for the nest and then left the area.

Further information was obtained from D. Wright as to the exact location of the nest; it appeared that we had been looking in the correct area. He also mentioned that, at the time he spotted the goose, two mink were also seen in the vicinity. With this in mind, the site was revisited on May 28. We went straight to the low-lying promontory where we had searched previously. However, heavy rains had caused the level of the river to rise and completely cover this area, including the nest site. Our inability to find the nest on the previous occasion may have been due to destruction by mammalian predators, such as the mink.

Whether the eggs were lost through flooding, predation or by some other means, the loss is unfortunate since the Snow Goose normally nests much farther north along the coast of Hudson Bay as far as Manitoba is concerned.[1] Had the eggs successfully hatched and the young survived to fledging, this sighting would have represented the southernmost successful natural breeding record for the species (H. Copland, pers. comm.).

[1] GODFREY, W.E. 1966. The birds of Canada. Queen's Printer, Ottawa. 428 pp.

Pileated Woodpecker at nesthole *Hans DeVogel*

PILEATED WOODPECKERS NESTING ON THE NORTH SASKATCHEWAN RIVER

HANS DEVOGEL, Box 219, Neilburg, Saskatchewan, S0M 2C0.

Going upstream on 22 May 1979 from my camping place on the Big Gully Creek, Saskatchewan, to inspect the heron rookery on Cranberry Island, I found the nest of a pair of Pileated Woodpeckers. The herons had deserted the rookery and relocated a mile farther upstream.

On one of the dead black poplars was a Pileated Woodpecker drumming and calling; another bird disappeared in a hole right under an old heron's nest. After about 10 minutes, it popped out again, and both birds flew across the river.

On 3 June I went back and climbed the steep river bank and set up a tripod for my Pentax and 200mm lens. After waiting about an hour, one bird came from across the river, perched in a nearby tree and gave a soft call. The other bird flew out of the nesting hole right away. After a short while, the new arrival went in. It was apparent that both parents shared incubation.

I later observed that the young were fed roughly every two hours by both parents. At first an adult would go into the nest to feed the young, come out again and perch in a nearby tree. After a while it went back in and when it came out it flew to the same tree. I suppose this was to clean out the nest.

As the young got bigger, they would stick their heads out of the nesting hole and were fed from outside. The nest was not cleaned out then, because there was no room for the old bird to get in.

The actual feeding period was very short. I never saw the parents carry anything in their beaks. Coming in with food, they never flew directly to the nest hole, but perched in a nearby tree and looked around for awhile. On one occasion, a bird landed above the nest and had to back down.

The young Pileated Woodpeckers did not make the same burring noise that young flickers do. Instead they made a sort of *ted, ted, ted* which later turned into the adult call. The parents were very silent at first when the young were about ready to leave the nest, then there was a lot of calling going on, answered in the same way by the young. To my surprise, the young had the same red crest as the parents.

I was fortunate enough to be present on 8 July when the first young left the nest. It just popped out of the nesting hole and landed none too gracefully between the two parents on a nearby tree. Then I found out that there were more than two young in the nest because again, two little red heads pushed out of the nest hole.

For about four hours, I never saw the old birds feed the two young left in the nest; it was a matter of "if you want it, come and get it". As far as I could see, the young had the same plumage as the old ones, but were a little smaller.

Unfavorable weather prevented me from making further observations.

POSSIBLE SWALLOW RESPONSE TO INSECTICIDE USE

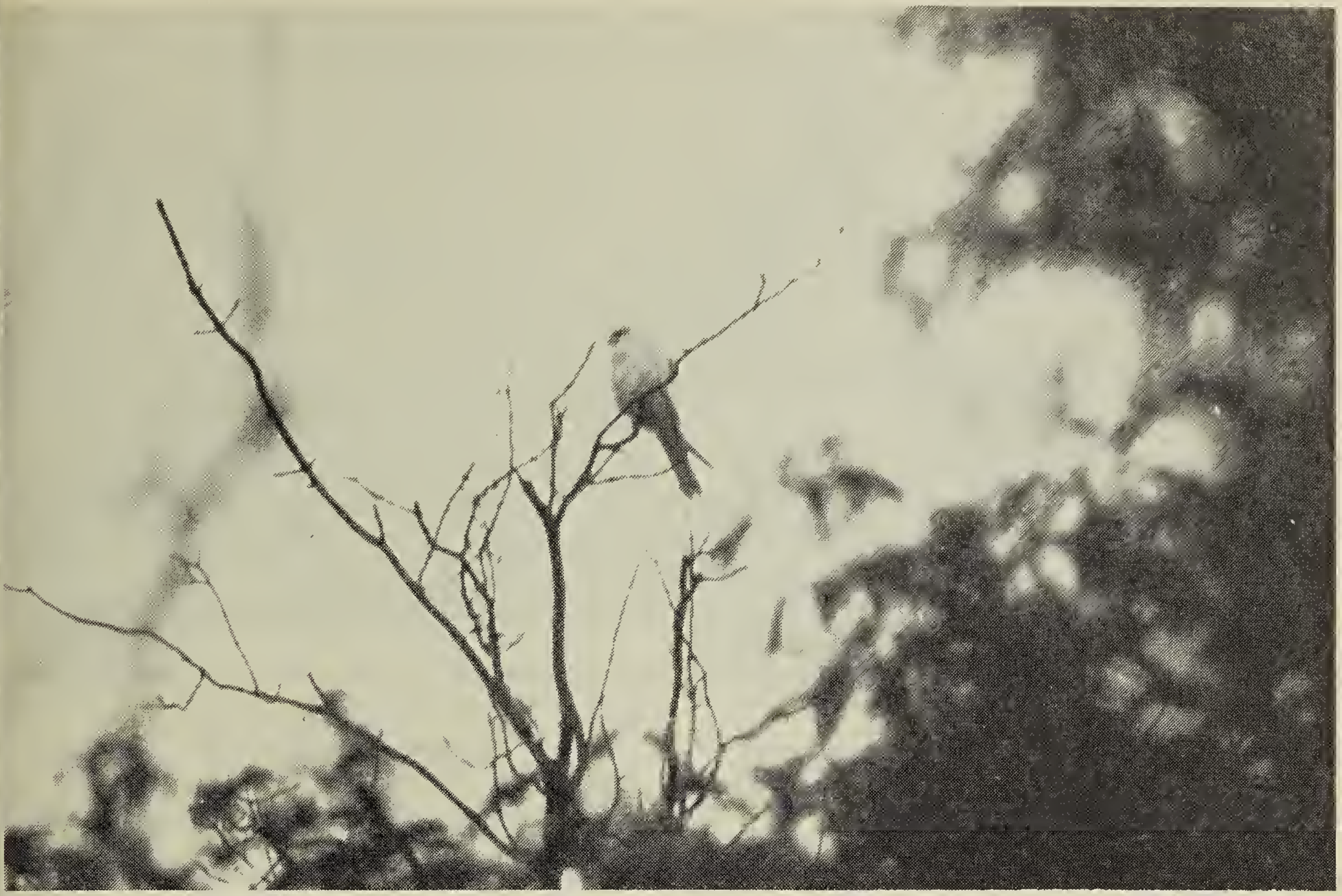
G.A. WILDE, Box 1196, Hinton, Alberta, T0E 1B0.

Each year for the past five years, an average of two clutches of Tree Swallows and three clutches of Cliff Swallows has been successfully reared in my yard in Hinton, Alberta. This year on 9 June 1979, I used an insecticide (Cygon 2E) to combat an outbreak of Birch Leaf Miner. The insecticide was liberally applied to the trunks of six Balsam Poplars, two White Birch and five Manchurian Elms. This was the first application of an insecticide since 1972. At approximately the same date, several neighbours also applied a variety of insecticides to combat the same outbreak.

The next day, I noticed the absence of both species of swallows and for 14 days following the application of the insecticide, I did not see any swallows in my yard; however, in an adjacent yard where insecticides were not applied, swallows continued with their nesting activities. On 16 June 1979, I examined my nesting boxes (one on the garage and the other on a 3-metre post) and found a very disturbed nest containing six eggs and an intact nest with one egg. I also examined the six Cliff Swallow nests on my house. They contained: two dead young, one egg, 3 empty swallow nests and one House Sparrow nest. The first swallow activity I noticed in my yard after the insecticide application was on 23 June when a number of Cliff Swallows briefly visited the nest which had contained young.

During this period of time (9-23 June) House Sparrows, Starlings, Robins, and Pine Siskins were frequent visitors to my yard and a Chipping Sparrow nested in a conifer with no noticeable response to the insecticide application on the adjacent trees.

I believe the desertion of the nests and the avoidance of the yard by swallows was directly related to the application of the insecticide.



White Kestrel at Eastend, 2 August 79 — *Bob Stewart*

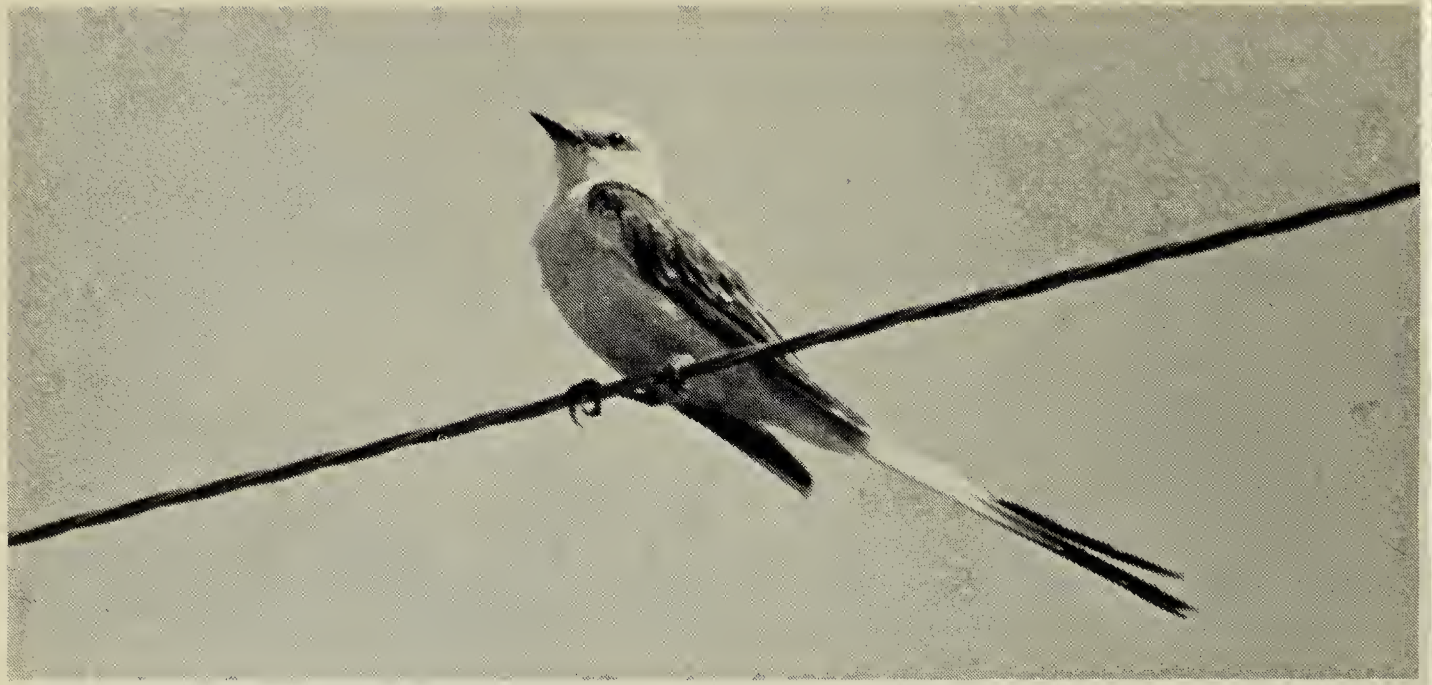
WHITE KESTREL AT EASTEND, SASKATCHEWAN

JANE JENKINS, Box 99, Eastend, Saskatchewan, S0N 0T0.

On the morning of 2 August 1979, I was talking with Bob Stewart, a Saskatchewan Fisheries and Wildlife Branch biologist, in an abandoned farm yard about 7 miles west of Eastend, Saskatchewan. Suddenly I noticed the white flash of a bird landing on a powerline not far from where we were standing. I casually glanced over, expecting to see one of the white pigeons I had often seen in this yard. However, I got quite a shock when I saw the bird was actually a Kestrel. The plumage was entirely white, with only a pale hint of rufous on the tail and wings, suggesting that the bird was perhaps a female. The eye appeared dark. The bird, intent on several sparrows in the bushes directly below its perch, was bobbing its head and wagging its tail, mannerisms which characterize the American Kestrel.

After fumbling frantically for binoculars and camera, we observed the falcon for approximately 5 minutes from a distance of approximately 200 feet. It then flew about 1/4 mile to another shelter belt where it chased a small flock of blackbirds before perching on top of a dead cottonwood tree. At this time, another, normally colored male Kestrel flew in and began diving on the white bird. The white Kestrel dodged a few attacks and then resumed its own attack on the blackbirds. We quickly lost sight of the action.

Although several Kestrel family groups were in this area for the next few days, the white Kestrel was never seen again.



Scissor-tailed Flycatcher near Whitemouth, 18 August 79 *Peter Taylor*

SCISSOR-TAILED FLYCATCHER NEAR WHITEMOUTH, MANITOBA

PETER TAYLOR, Box 597, Pinawa, Manitoba, R0E 1L0

About 11 a.m. on 18 August 1979 I observed a Scissor-tailed Flycatcher approximately 13 km northwest of Whitemouth, Manitoba. It was perching on a telephone wire alongside a gravel road through farmland, 0.8 km south of the junction of Provincial Highways 11 and 44. It remained in the vicinity for much of the day, and was subsequently seen by N.J. Cleveland, H.W.R. Copland, J. Loch and W. Neily. It could not be located on 19 or 20 August.

The pink colouration on the bird's flanks was very pale, and the tail was relatively short (see photograph), indicating that the bird was immature.[4] The extent of pink in the wing linings was not ascertained, but it was not prominent. The bird was active and hawked several large insects, probably bees, which it battered on the wire in kingbird fashion before swallowing them.

There are 10 other Manitoba records of Scissor-tailed Flycatchers, involving 13 individuals of which five were collected.[1] Curiously, the bird described here appears to be the first Scissor-tailed Flycatcher recorded in Manitoba since 1952—a gap of twenty-seven years—whereas 10 of the 13 birds previously recorded were seen during the 28 year period from 1924 to 1952. However, there are recent records for both Saskatchewan and northwestern Ontario.[3] [2]

[1] BRADLEY, J.E. 1971. A sight record of the Scissor-tailed Flycatcher for southern Saskatchewan. Blue Jay 29:34.

[2] GOODWIN, C.E. 1979. The Autumn Migration, 1978: Ontario Region. American Birds 33:173.

[3] HEDGER, H. 1979. Scissor-tailed Flycatcher at Tugaske, Saskatchewan. Blue Jay 37:128.

[4] ROBBINS, C.S., B. BRUUN, H.S. ZIM and A. SINGER, 1966. Birds of North America: A field guide to identification, Golden Press, New York, p. 191.

OWL AND DUCK NEST CLOSE TOGETHER

Mrs. RETA BARR, Davidson, Saskatchewan, S0G 1A0.

My husband, George Barr, while summerfallowing near Davidson, Saskatchewan, in the spring of 1977, found an owl nest and a duck nest close together on the ground. Having seen them in time, he swung the cultivator widely to the side, leaving a good-sized area with cover. He hoped the crows would not notice.

We went almost daily to follow progress, standing on the truck box at a distance. The photograph was obtained in this way, when the first two Short-eared Owls had hatched in the nest in the foreground. Owls begin to incubate as soon as they lay one egg, so their young do not hatch at the same time.

I was the one summerfallowing on the day the ducklings hatched, and the duck was ready to take them to a nearby slough. The owl sat at her nest and paid no attention but crows flew by and spotted the ducklings. I just worked round and round and kept the crows from landing until the mother duck and her ducklings arrived safely at the slough.

The little owls grew daily and stayed in the area for some time.

Owl's nest and duck's nest.

Rough-legged Hawk *M.A. Gollop*

ROUGH-LEGGED HAWK PREDATION ON SHARP-SHINNED HAWK

GENE COLLINS, Department of Mines, Natural Resources and Environment, 1495 St. James Street, and ROBERT BIRD, 529 Mark Pearce, Winnipeg, Manitoba.

About 1500 on 15 September 1979, we observed an incident of predation by a Rough-legged Hawk on a Sharp-shinned Hawk in the Pembina Valley, 17 miles west of Pilot Mound, in southwestern Manitoba. Although we did not see the Rough-leg strike the Sharp-shin, we saw the larger bird sitting on it along a road allowance. As we approached, the Rough-leg tried unsuccessfully to fly off with its prey. We found the Sharp-shin bleeding from the back of the skull and in the last throes of dying.

We left the dead bird and came back one-half hour later to discover that the Rough-leg had returned and had torn the feathers off the back of its victim. We did not disturb the dead bird and left the area.

LONG-LEGGED BAT IN ALBERTA*

HUGH C. SMITH, Provincial Museum of Alberta, 12845 - 102 Avenue, Edmonton, Alberta, T5N 0M6.

Long-legged bats (*Myotis volans*) are widely distributed in western North America. They range from Alaska to Mexico and as far east as western North and South Dakota and Nebraska.[2] In Alberta specimens have been taken at Henry House,[4] Dried Meat Lake,[8] and along the Milk River.[6] Schowalter has recently collected specimens at Cadomin and Chungo Caves and additional specimens along the Milk River. The specimens collected by Schowalter have been deposited in the Provincial Museum of Alberta.

Although the species is wide ranging, few details of its life history are available. Barbour and Davis have summarized this information.[2] Nothing has been reported for the species from Alberta. The specimens obtained along the Milk River were collected by scooping them out of the air with a hand held net as the bats flew by a farm yard light or in a mist net placed across a water hole, and the specimens from Cadomin and Chungo were mist netted at the mouth of the caves (Schowalter, *pers. comm.*). The site along the Milk River is near sandstone cliffs with cottonwoods growing on the flood plain between the cliffs and the river. The water hole site is located near the Milk River valley but on open grassland. Cadomin and Chungo Caves are located in the mountains of southwestern Alberta.

Table I outlines the dates collections were made and the age and sex of the specimens collected. The age of the specimens was determined by the amount of cartilage apparent at the finger joints.[2] One other specimen has been collected at Lethbridge on 24 July 1977 but this specimen has not been aged or sexed and is preserved in alcohol.

Myotis volans is a medium sized brown bat. It superficially resembles the more common *Myotis lucifugus* but is easily distinguishable by its short, rounded ears, fur on the underside of the wing that extends from the elbow to the knee, and a keeled calcar.[5] The skull is small and delicate with a short rostrum,[3] and a large, high braincase.[5] Four subspecies have been described for this bat, two confined to Mexico and two farther north.[5] One subspecies (*Myotis volans longicrus*) is reported for Canada.[1] On 5 September 1911 J.H. Riley collected a bat at Henry House, Alberta that Hollister named *Myotis altifrons*.[4] Miller and Allen referred this specimen to *Myotis volans longicrus*.[5] Michael Bogan, in a letter to D. Schowalter (14 November 1977), thought that this specimen is closer to *M. v. interior* than to *M. v. longricus*. With additional specimens now at hand it is possible to compare specimens from different regions of Alberta.

A suite of 15 measurements were used in this study: Total length (TL), hind foot (HF), ear (E) and tail were taken from specimen labels and are the preparator's measurements. In addition, the following measurements were taken by the writer: forearm (FA), condylocanine length

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* Natural History Contribution 53.

TABLE 1. Specimens of *Myotis volans* collected in Alberta.

	Date Collected	Number Collected		Age	
		Male	Female	Adult	Juv.
Milk River	4 June 1976	1	1	2	—
	13 September 1977	4	—	3	1
	24 June 1977	—	1	1	—
Cadomin	7 September 1977	1	—	1	—
	20 September 1977	1	1	2	—
	17-18 August 1978	16	1	8	9
Chungo	20 September 1978	15	2	10	7

TABLE II. Measurements Adult Males — *Myotis volans* (Measurements in mm)

		Chungo-Cadomin (n=25)	Milk River (n=3)
TL	Range	103-92	93-91
	mean	98.16	92
	SD	2.48	.99
HF	Range	11-9	10-9
	mean	10.0	9.33
	SD	.49	.58
E	Range	15-12	12-11
	mean	14.12	11.67
	SD	.60	.58
FA	Range	38.72-35.27	38.78-35.80
	mean	36.91	37.16
	SD	.79	1.50
CC	Range	13.25-12.59	12.92-12.37
	mean	12.86	12.57
	SD	.17	.31
GS	Range	14.77-13.66	14.08-13.62
	mean	14.06	13.78
	SD	.25	.26
IB	Range	4.17-3.75	4.00-3.83
	mean	3.96	3.91
	SD	.20	.09
BB	Range	7.48-6.85	7.08-6.90
	mean	7.21	7.0
	SD	.18	.09

OD	Range	5.73-5.10	5.43-5.09
	mean	5.31	5.23
	SD	.16	.18
MTR	Range	5.44-5.08	5.24-5.02
	mean	5.25	5.15
	SD	.10	.12
MAXB	Range	5.85-5.39	5.83-5.39
	mean	5.62	5.61
	SD	.23	.22
RL	Range	6.12-5.14	5.61-5.04
	mean	5.60	5.36
	SD	.28	.29
TAIL	Range	44-39	43-41
	mean	41.8	42.33
	SD	1.55	1.15
MAST.B	Range	7.95-7.53	7.92-7.30
	mean	7.77	7.63
	SD	.10	.31
LEG. LENG	Range	19.92-17.56	18.64-18.46
	mean	18.57	18.57
	SD	.61	.10

TABLE III. Adults Females — *Myotis volans* (Measurements in mm)

		Chungo-Cadomin (n=2)	Milk River (n=2)
TL	Range	99-96	97-95
	mean	97.5	96
	SD	2.12	1.41
HF	Range	10-10	11-8
	mean	10	9.5
	SD	0.0	2.12
E	Range	14-12	16-14
	mean	13	15
	SD	1.41	1.41
FA	Range	38.20-37.18	38.55-38.02
	mean	37.69	38.29
	SD	.72	.38
CC	Range	13.06-12.77	12.80-12.76
	mean	12.92	12.78
	SD	.21	.03
GS	Range	14.38-14.05	13.92-13.66
	mean	14.22	13.79
	SD	.23	.18

IB	Range	4.00-3.83	3.95-3.84
	mean	3.92	3.90
	SD	.12	.08
BB	Range	7.33-7.24	7.04-6.95
	mean	7.29	7.0
	SD	.06	.06
OD	Range	5.67-5.35	5.22-5.22
	mean	5.51	5.22
	SD	.23	0.0
MTR	Range	5.37-5.10	5.22-5.00
	mean	5.24	5.11
	SD	.19	.16
MAXB	Range	5.62-5.62	5.41-5.40
	mean	5.62	5.405
	SD	0.0	.01
RL	Range	5.46-5.03	5.54-5.22
	mean	5.25	5.38
	SD	.30	.23
TAIL	Range	44-42	44-43
	mean	43	43.5
	SD	1.41	.71
MAST.B	Range	7.91-7.78	7.80-7.76
	mean	7.85	7.78
	SD	.09	.03
LEG. LENG	Range	19.44-19.21	18.82-18.48
	mean	19.33	18.65
	SD	.16	.24

TABLE IV. Tooth Anomalies in *Myotis volans*.

Museum No.	Tooth Anomaly	Sex	Age	Location
Z77.62.2	Right lower P_2 missing Left upper P^2 very small	Female	Adult	Cadomin
Z78.83.17	Right upper canine, P^2, and P^3 missing	Male	Adult	Cadomin
Z78.98.16	Upper P^3 missing on both sides	Male	Adult	Chungo
Z78.98.17	Upper P^3 on both sides extremely small	Male	Adult	Chungo
Z78.98.18	Left upper P^2 and Right lower P_3 missing	Female	Adult	Chungo

(CC), greatest skull length (GS), interorbital width (IB), breadth of braincase (BB), occipital depth (OD), maxillary tooth row (MTR), maximum breadth across M^3 (MaxB), rostral length (RL), mastoid breadth (MAST B), and length of tibia (Leg Leng). Comparisons of means of measurements between bats collected at Cadomin and Chungo Caves were made with those collected along the Milk River. Comparisons were also made between the sexes from both areas. Any conclusions based on size alone are tentative due to the extremely small sample sizes of some classes. (Tables II, III).

When comparing males to males it appears that the specimens from the Cadomin-Chungo area are larger than those from the Milk River. In the 15 characters compared, those specimens from Cadomin-Chungo are larger in 12 characters, specimens from Milk River are larger in two characters, and one character is the same for both areas. Similarly, when females from these areas were compared those specimens from Cadomin-Chungo are larger in 12 characters and those specimens from Milk River are larger in 3 character

The size difference between sexes seems to indicate that females are slightly larger than males. In the Cadomin-Chungo area females are larger in eight characters, males larger in five characters, and two characters are the same. In the Milk River area females are larger in ten characters, males are larger in four, and one character is the same for both.

The pelage of both males and females from a given area is similar. Those bats from the Milk River have a lighter pelage color than those bats from the Cadomin-Chungo area. Immature bats have a darker pelage than adults and the immature bats from the Milk River area have a lighter pelage color than the more northern bats. Similarly, the color of the flight membranes is lighter in the Milk River specimens.

The pelage of the southern bats may be described as yellow-brown on the back and light yellow-grey on the belly. The northern bats are dark smoky brown on the back and smoky grey on the belly.

In view of the slight differences in size (the northern specimens are larger than the southern specimens) and the marked differences in pelage, I believe those bats from the Milk River area are referrable to *Myotis volans interior* and those from the Cadomin-Chungo area are referrable to *Myostis volans longricus*. Miller and Allen in their key to *Myotis volans* distinguish between these two races on the basis of pelage coloration.[5] If my conclusion is correct, this is the first record of the subspecies *Myotis volans interior* in Canada.

The range of *Myotis volans* in Alberta is shown to be along the mountains with an area in the central region of the province extending to the Edmonton area. This extension is due to a specimen collected by Soper at Dried Meat Lake. This specimen is on deposit at the University of Alberta. When I examined it I believe that it is misidentified and should be referred to as *Myotis lucifugus*. On this basis then, I suggest that the range for *Myotis volans longricrus* be confined to the mountain regions of the province and the range for *Myotis volans interior* is along the Milk River in Alberta similar to that outlined by Hall and Kelson[3] and extending as far north as Lethbridge.

In examining the skulls of these specimens a note was made on the number and size of the small premolars in both the upper and lower jaws. The dental formula for *Myotis volans* is: I 2/3, C 1/1, Pm 3/3, M 3/3, for a full complement of 38 teeth. The premolars consist of two small teeth (Premolars 2 and 3) and one large tooth (Premolar 4). In the upper jaw P^2 and P^3 are small and crowded, so much so that occasionally P^3 may be hidden when viewed from the side. In the lower jaw there is less crowding and P_2 and P_3 are more in-line with the other teeth.[5] Table IV lists a number of specimens in which some form of dental anomaly was noted. In only one case (Z78.83.17) is it believed that the missing teeth are the result of a pathological condition. In the other cases it is believed that the crowding of the premolars has resulted in teeth being missing. In a search of the literature available to me I have not been able to find any reference to this having occurred in *Myotis volans*, although it has been reported in *Myotis lucifugus* (see Smith[7]). No explanation can be offered at this time on why this is occurring in this species because of so few examples.

I would like to thank D. Schowalter, Alberta Fish and Wildlife Division, for the work he has done in collecting these bats and for depositing them with the Provincial Museum of Alberta.

[1] BANFIELD, A.W.F. 1974. The Mammals of Canada. Univ. of Toronto Press, Toronto. 438 pp.

[2] BARBOUR, R.W. and W.H. DAVIS. 1969. Bats of North America. Univ. Press of Kentucky, Lexington, Kentucky. 286 pp.

[3] HALL, E.R. and K.R. KELSON. 1959. The Mammals of North America. Ronald Press Co., New York. Vol. 1. 546 pp.

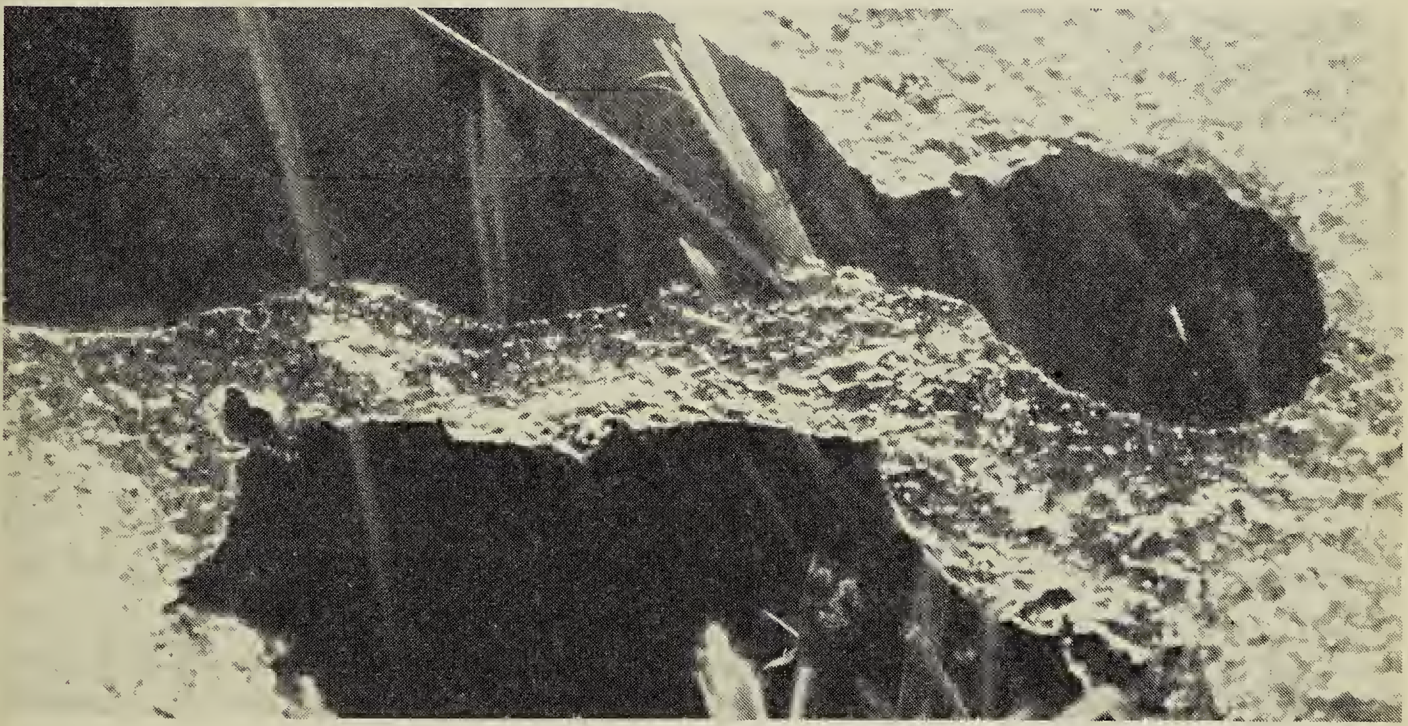
[4] HOLLISTER, N. 1912. Mammals of the Alpine Club Expedition to the Mount Robson region. Canadian Alpine Jour. Spec. No. 1-44.

[5] MILLER, G.S. and G.M. ALLEN. 1928. The American bats of the genera *Myotis* and *Pizonyx*. Bull. U.S. Nat. Mus., 144. 218 pp.

[6] SCHOWALTER, D.B. 1978. Some western Canadian bat records. Blue Jay 36:49-50.

[7] SMITH, H.C. 1977. Little Brown Bats with abnormal dentition. Blue Jay 35:175-177.

[8] SOPER, J.D. 1964. The Mammals of Alberta. Queen's Printer, Edmonton. 402 pp.



An ice bridge *J.B. Gollop*

A coon called Cass *Lorne Scott*

A COON CALLED CASS

JOAN SCOTT, Box 995, Indian Head, Saskatchewan, S0G 2K0.

Our acquaintance with "Cass" was made in May, 1977, when a neighbour told us that he had a family of raccoons living in the attic of an old house. He thought that we might like to photograph them, and he also wanted us to help him move them out of the house. While he and my husband Lorne held the mother at bay with two pool cues, his daughter and I moved the six baby coons into a box which we left beside the house. The next morning five of the six young were gone, but the sixth was still in the box the following day, crying helplessly, so our neighbour brought it over to us.

The baby coon wouldn't accept milk from an eye-dropper, but we got it to take it from a baby's bottle with a long nipple. It took up residence in a laundry basket in our spare bedroom, with a heating pad and fuzzy seat cover for a bed.

Cow's milk did not agree with the coon, so I decided to consult a veterinarian to get a more suitable formula. When you visit a vet with an animal you have to register it under its name,

Cass liked to cuddle *Lorne Scott*

so I laughed and christened the baby raccoon on the spot, calling it "Cass" after a big man in my husband's office whose huge hand hid it completely when he held it in his palm. When "the girl with the raccoon" was called into the office, several vets had congregated out of curiosity! They decided Cass was a female, very undernourished and dehydrated. I was given a powdered milk replacer (Isbilac) and a bottle of Kaopectate to experiment with. The Isbilac was just what she needed and she began to gain weight rapidly. For seven weeks all she did was to eat and sleep.

Lorne and I were driving into work in Regina every day from Indian Head, so we took Cass with us in order to be able to feed her every four hours. As long as she slept through the day, she stayed with Lorne in the Wascana Waterfowl Park naturalist's office. When she started roaming about, I took her to work with me. Once her eyes opened and her ears popped out, she became a true mischievous raccoon.

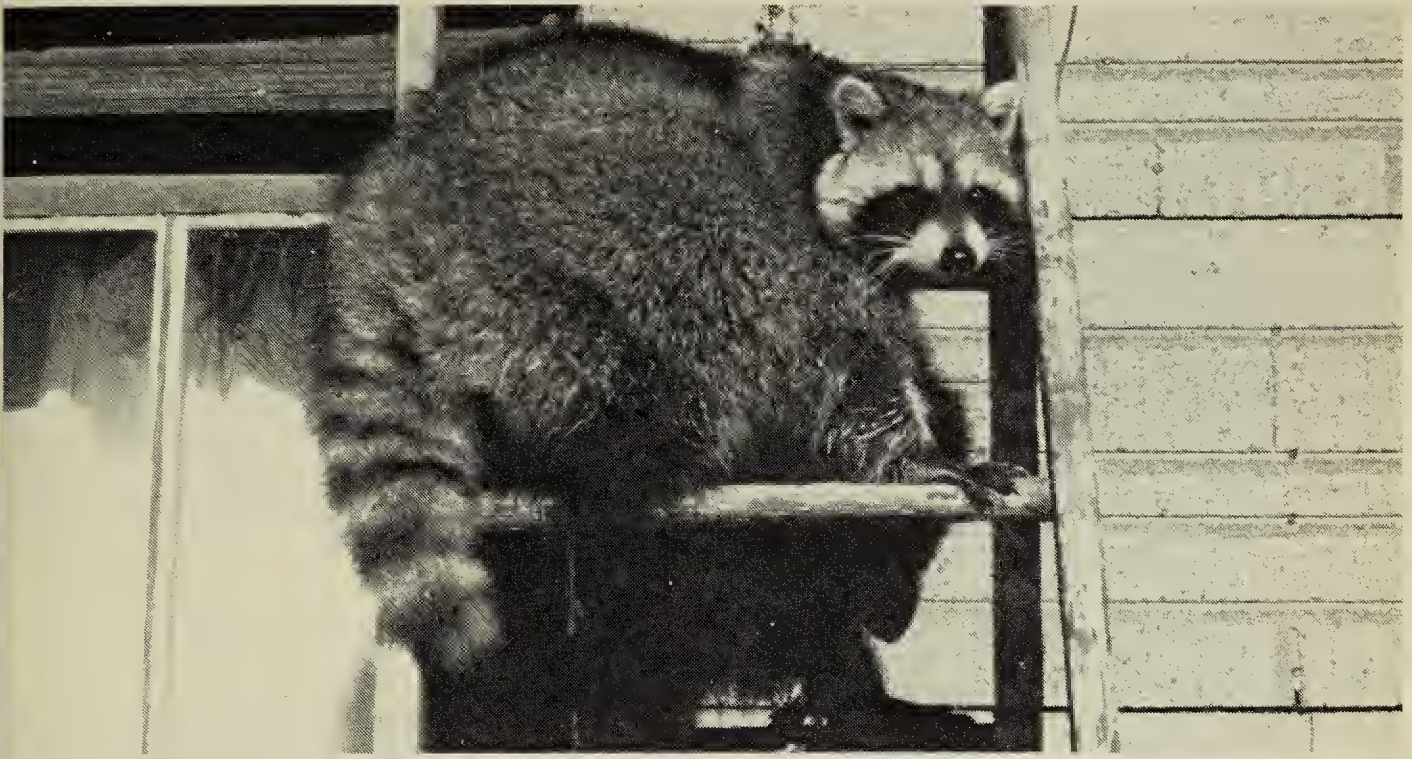
Cass was soon a veteran traveller, going everywhere with us. She attended the wedding of the *Blue Jay* Editor, Gary Seib, and Barbara Shourounis in Eastend, she went to the SNHS summer meeting in Yorkton, and she made a guest appearance for a group of children at Camp McKay.

Everybody loved Cass. Even when she startled my father by leaning on the horn when he was working under the hood of the car, she was soon forgiven when she found the watch crystal that he had lost. Her antics were priceless, and she was always busy with her "hands", even going through your pockets or feeling in your ear. Our visitors were always entertained by her, just as we were. To many prairie people, coons have been a novelty until very recently when their range has extended dramatically in southern and central Saskatchewan.

Gardening was one of Cass' favourite occupations. She would dig up potatoes at a feverish rate, and was quite disappointed when you did not pick up the ones she dug. She learned to pod peas in the twinkling of an eye, and couldn't wait for a pail of vegetables to be filled to knock it over and play field hockey with the contents. When I introduced her to corn, she went absolutely "raccoon-silly", knocking over stocks and attacking the husks.

Lorne and I were determined from the first not to keep her once she no longer needed us. We had read that raccoons make the switch from captivity to their normal wild life easily and successfully, and we felt that by mid-August it was time to move her out onto the porch and to introduce her to her natural environment. So every evening I took her for walks around the farm, exploring old trees, looking under rocks, pulling down rose bushes to eat the hips, "fishing" for snails and water grubs in the sloughs, and always ending up at our big dugout. At dusk we would meet other animals there—a family of Great Horned Owls and a doe and her twin fawns came regularly, and we would usually listen to a serenade of coyotes before going back to the house. I loved those evening expeditions as much as Cass, and was fascinated watching her wading into the water to feed. While her "hands" were busy stirring up the water and feeding

Cass fishing for snails in the dugout *Gary W. Seib*

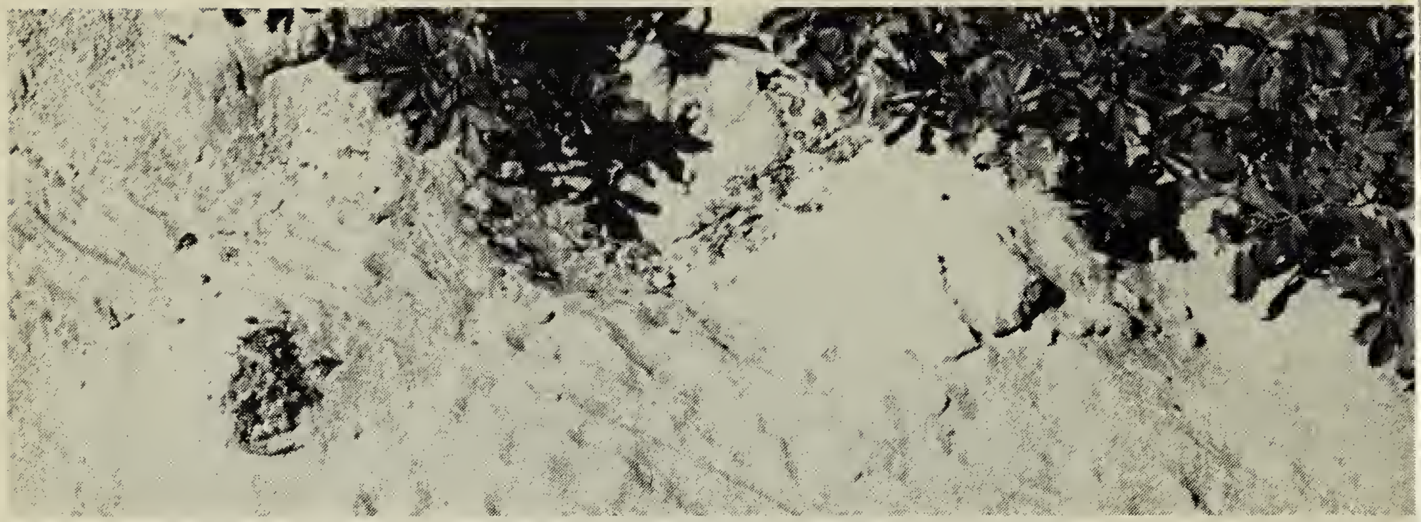


Helping with the storm windows *Lorne Scott*

herself, she never seemed to watch what she was doing, but kept a watchful eye out for danger.

In mid-September, Cass decided to take up residence in our barn, and became nocturnal. I took food and water out to her, but would only see her in the evening when she was feeding, "dunking" her food piece by piece, if water was handy. One night we found that a skunk had also moved into the barn under hay bales, and Cass compromised by moving up to the loft. Soon we saw less and less of her, as her instinctive natural habits began to replace her dependence upon her human friends. By mid-October, she was ready for winter—she now weighed 20 lbs. and had acquired a beautiful thick coat. The last time she came to the house during the day was on October 23 when she attempted to help Lorne put on storm windows and fell off the ladder when I looked out the window and startled her. A few minutes later, she looked beseechingly to Lorne for help when she fell through the thin ice on the water trough. At Christmas, we took her a special Christmas dinner, but she had changed—she simply took a piece of food and disappeared with it, and when I tried again to see her in February she was shy and growled at me. The last time we saw her was on March 12 when Lorne watched her walking along the ridge of the barn. I went out and called her, but she was listening to a stronger natural urge and left us.

When Cass left, I felt that I had lost a real friend, and in my memory recalled all her amusing habits. I could see her covering her face with her "hands" and peeking through her fingers when she sensed trouble, or just conveniently disappearing under the couch if she knew that she was the cause of it! I thought of all the times that I had found lost articles among her "treasures" hidden in an old suitcase under a bed. I thought of her falling asleep in my lap in the evening watching TV, and realized I had lost a great companion. But we were glad that she had answered the call of the wild, and when fall came again and Lorne found that we had two raccoons wintering under a granary, we wondered whether Cass might be one of them.



Kangaroo rat tracks near Burstall, 3 September 79 — *David Baron*

EVIDENCE OF KANGAROO RATS NEAR BURSTALL, SASKATCHEWAN

DAVID BARON, Division of Natural History Research, Saskatchewan Museum of Natural History, Regina, Saskatchewan, S4P 3V7.

Ord's kangaroo rat (*Dipodomys ordii*) is a small, nocturnal burrowing rodent of the arid plains areas of western North America. Its reduced fore limbs, greatly enlarged hind limbs and long tail are adaptations to a bounding gait, and give the species a kangaroo-like appearance.

The first Saskatchewan specimen of Ord's kangaroo rat was found at Shackleton in 1933.[1] Later, Nero and Fyfe located colonies of the species in the Great Sand Hills south of Sceptre.[2] They also reported evidence of kangaroo rats in a large dune west of Mendham. In Alberta a large colony was found about 49 km southwest of Empress.[3] These animals had colonized a roadside in a grassland area.

In September 1979 staff of the Saskatchewan Museum of Natural History made a field trip to the Great Sand Hills to reconnoiter areas with habitat suitable for supporting a population of kangaroo rats. In conjunction with this study, the active sand dune area approximately 6 km north of Burstall was investigated on 3 September 1979. The area examined (Sec. 14-20-29-W3) consists mainly of stabilized dunes vegetated with grasses and shrubs, such as rose (*Rosa* sp.) and hoary sagebrush (*Artemisia cana*), but several active dunes are present. Three dunes in an area approximately 1 km square were examined and many tracks and recent burrows of Ord's kangaroo rat were observed on each dune. The most common vegetation in the area of the animals' activity was lance-leaved psoralea (*Psoralea lanceolata*) and Wood's rose (*Rosa woodsii*). Burrows were not detected in the surrounding grassland areas.

The kangaroo rat colonies in the Burstall dunes are approximately 13 km southwest of the colony reported near Mendham[2] and 40 km east of that reported by Smith and Hampson[3] and fall within the expected range of the species in Canada.

[1] NERO, R.W. 1956. The kangaroo rat in Saskatchewan. Blue Jay 14:3-4.

[2] NERO, R.W. and R.W. FYFE. 1956. Kangaroo rat colonies found. Blue Jay 14:176-179.

[3] SMITH, H.C. and M.J. HAMPSON. 1969. A kangaroo rat colony in Alberta. Blue Jay 27:224-225.

WILD FOODS

FRANK BRAZIER, Blue Jay Bookshop, Box 1121, Regina, Saskatchewan, S4P 3B4

The other day I chanced to hear part of a radio broadcast about the food buying habits of Saskatchewan people living in the smaller communities. The speaker deplored the practices of rural shoppers who far too often spend their money on eatables of dubious nutritional value but of very high price. I suddenly realized that these people were probably unaware of the abundant wild foods waiting to be harvested in many places in the Province. No doubt that applies to most of us.

Over the past several years there have been many books published describing wild foods, plants in particular, which are free for the taking. Relatively few people have done any serious gathering (with the possible exception of nuts and mushrooms), which is probably fortunate, since the wild stocks could hardly stand the assault of millions of gatherers trampling the countryside to harvest free food. Two of the earlier books were *Stalking the Wild Asparagus* and *Stalking the Healthful Herbs* by the late Euell Gibbons, and among the most recent are three from The National Museums of Canada, in "The Edible Wild Plants of Canada" series:

No. 1: EDIBLE GARDEN WEEDS OF CANADA by Adam F. Szczawinski and Nancy J. Turner, paper, coil binding, $8.95;

No. 2: WILD COFFEE AND TEA SUBSTITUTES OF CANADA by Nancy J. Turner and Adam F. Szczawinski, paper, coil binding, $6.95;

No. 3: EDIBLE WILD FRUITS AND NUTS OF CANADA by Nancy J. Turner and Adam F. Szczawinski, paper, coil binding, $9.95;

No. 4: EDIBLE WILD GREENS OF CANADA is promised for 1980.

In the Introduction to No. 1, the authors refer to a table in Euell Gibbon's *Stalking the Healthful Herbs* that compares the nutritional values of wild foods with cabbage, celery, lettuce, onions, peppers and spinach. The wild plant foods equalled, and in many cases surpassed, those commonly-used garden vegetables.

Each book in "The Edible Wild Plants of Canada" series contains a bibliography detailing particulars of useful books on the subject of wild plant foods. Accompanying each wild plant described are many recipes. Where dangerous similar plants are known warnings also appear. These books are of particular value in western Canada as most of the species described are listed in *Wild Plants of the Canadian Prairies* by A.C. Budd and K.F. Best (now superseded by Looman & Best: *Budd's Flora of the Canadian Prairies*.)

Of the other wild plant food books

we have, among the most popular is *How Indians Use Wild Plants for Food, Medicine and Crafts* by F. Densmore (Dover, $4.00, paper). This describes the uses of wild plants by the Minnesota Chippewa. While the subject is not treated as extensively nor as attractively as in the Canadian "Edible Wild Plant" series, this book mentions plants not included in that series, such as Arrowhead, Bulrush, Bur Oak acorns.

Wild Plums in Brandy by Sylvia Boorman (McGraw-Hill, Ryerson, $4.95, paper) is a wild foods cookery book which has mouth-watering wild fruit, fish, game and gamebird recipes, and which adds wildflowers, mushrooms and the cattail flower spike to the list treated in the preceding books.

Two old-timers that still give useful service are: *Edible Wild Plants* by O.P. Medsger (Macmillan, $4.50, paper) and *Edible and Useful Wild Plants of the United States and Canada* by C.F. Saunders (Dover, $4.00, paper). The former appeared in 1939 and will be particularly treasured by devotees of Ernest Thompson Seton since he wrote the Introduction. In the Foreword the author records his indebtedness to C.F. Saunders' book which first came out in 1920. Many of the plants discussed in both books occur in western Canada and the books are useful for that reason.

Earth Medicine, Earth Foods by M.A. Weiner (Collier, $6.75, paper) is a guide to wild plants utilized by Indians for food and other purposes. About 40 of the food plants described grow in western Canada.

The foregoing titles are just a few of those currently available. The latest "Subject Guide to Books in Print", under the heading "Plants, Edible" lists about 30 titles which guide the gatherer of wild plants. The current "Lengthy Booklist" of The BLUE JAY BOOKSHOP describes 14 such titles, exclusive of mushroom guides. The titles described above are the inexpensive ones most useful for the beginner who wishes to try wild plant gathering for food. All beginners, whether they are naturalists trying out wild food gathering for a different experience, or harried housewives intent on stretching the food budget dollar to get the best nutrition possible for their families, should try and get the guidance of a field botanist when consulting these books, for the reasons given below.

Among the food plants described in *Earth Medicine, Earth Foods* are Cow Parsnip and Bracken Fern. The young, tender leaf and flower stalks of the former were eaten raw by Indian tribes across North America. The stems, after preparation, taste like celery and are highly nutritious, containing about 18% protein. The young plants of the latter are recommended as a wild food; the Bracken Fern is popular in New Zealand and Japan and was utilized by several Indian tribes. I have selected these two food plants as examples to emphasize the need for anyone harvesting wild foods to know thoroughly the dangerous species. The Cow Parsnip (*Heracleum lanatum*) is a desirable wild food but there is a danger that the unwary could include specimens of its toxic relatives, the water hemlocks (*Circuta bulbifera, C. douglassii, C. maculata*) as there is a superficial resemblance. This confusion could be fatal. Again, while no one will drop down dead after a meal which includes Bracken Fern, a warning has been inserted, belatedly, into *Edible Garden Weeds of Canada* that this fern contains an unidentified carcinogen and should not be eaten at all. This particular book does have an Appendix: Some Weeds You Should Avoid, which makes it a worthwhile purchase indeed for the wild food gatherer.

It is only prudent that gatherers know thoroughly the poisonous plants they might encounter. They could well invest in such books as: *Common Poisonous Plants of the Northern Plains Dangerous to Man* by L.J. Schermeister (N. Dak. State Univ., $1.10, paper), *Poisonous Plants of the United States* by W.C. Muenscher (Collier, $5.50, 1939), and *Deadly Harvest* by J.M. Kingsbury (Holt, Rinehart & Winston, $2.35, paper). These are three books dealing with this important topic. The literature on edible and poisonous fungi is a separate study in itself.

Please note that the prices I have quoted above are the list prices of books still in stock. Replacement supplies could well cost more. However, at any price, books on wild edible plants are worthwhile investments which could well open the door to a new and exciting experience. Incidentally, The BLUE JAY BOOKSHOP would be glad to report availability and price of any title for any member of SNHS on request. Simply drop us a line at P.O. Box 1121, Regina, Sask. S4P 3B4.

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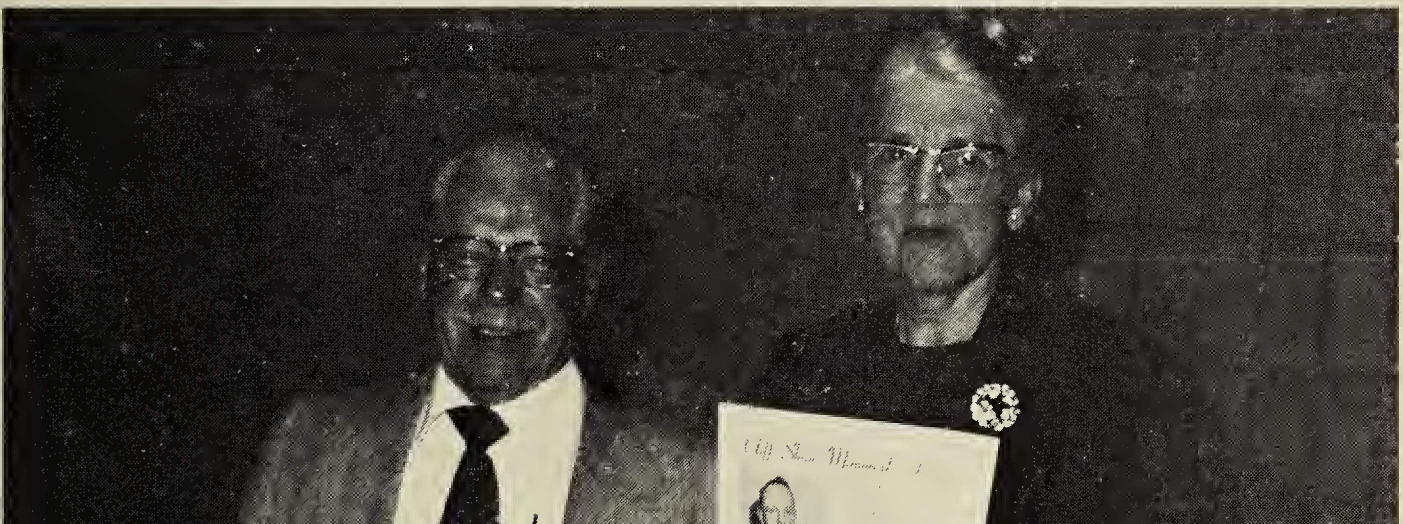
In press BELCHER, M.: THE BIRDS OF REGINA (REVISED). Several more due soon! Get them as they are published!



1979 AWARD WINNERS: Frank Brazier, who was presented the Conservation Award for his long service to the Society, and the management of the Blue Jay Bookshop, poses with Jean Bancroft of Winnipeg, who was presented the Cliff Shaw Award for a series of articles on bird nesting behavior.

Gary W. Seib

SASKATCHEWAN NATURAL HISTORY SOCIETY

Financial Statement — year ending September 30, 1979

INCOME			
Memberships (including sales of Blue Jay)		15207.34	
Memberships (extra re: supporting and sustaining)		1570.00	16777.34
Spec. Pub. No. 1 Guide to Sask. Mammals	Nil		
Spec. Pub. No. 2 Birds of Sask. River	Out of print		
Spec. Pub. No. 3 Birds of Regina	Nil		
Spec. Pub. No. 4 Blue Jay Index (1942-60)	22.00		
Spec. Pub. No. 5 Birds of Lake Athabasca	46.63		
Spec. Pub. No. 6 Birds of N.E. Sask.	19.13		
Spec. Pub. No. 7 Birds of Moose Mountain	29.73		
Spec. Pub. No. 8 Blue Jay Index (1961-69)	39.79		
Spec. Pub. No. 9 Birds of Rosetown-Biggar	100.75		
Spec. Pub. No. 10 Birds of Gainsborough-Lyleton	576.39		
Publication Hours and the Birds	Out of print		
Publication Birds of the Elbow	3.74	838.16	
Donations — General		1173.00	
Interest (Savings account and bonds)		1238.50	
Annual Meeting 1978 (Moose Jaw) (net)		5.60	
Summer Meeting 1979 (Eastend) (net)		244.68	
Refund of 1977 expense re: C.N.F. annual meeting		250.00	
Miscellaneous (Premium re: U.S. funds)		77.98	
Sales from Blue Jay Bookshop	8396.36		
Less: Cost of sales	6343.90		
Gross profit (24.4% of sales)	2052.46		
Less: Postage, supplies, etc.	378.59		
Honoraria	669.55		
Net Profit (12% of sales)		1004.32	4832.24
			21609.58
EXPENSE			
Printing of Blue Jay (4 issues)		11873.63	
Printing of Newsletter (3 issues)		1612.67	
Honoraria ($600, 200, 500, 15, 13)		1328.00	
Postage		753.44	
Office supplies and stationery		349.31	
Office equipment: address plates		150.09	
Misc. office and admin. expense		204.65	
Printing cost of Birds of Gainsborough-Lyleton	784.30		
Less: donation	350.00	434.30	16706.09
EXCESS OF INCOME OVER EXPENDITURE			4903.49

Statement of Assets and Liabilities at September 30, 1979

ASSETS				
Cash on hand (Bookshop)				40.00
Cash in bank (chequing) — SNHS			9484.58	
— Bookshop			1461.76	
Cash in bank (savings) — SNHS			11257.52	22203.86
Canada Savings bonds				5000.00
Stock on hand (Bookshop)				3343.74
Accounts receivable (491.46 less prepaid orders 122.40)				369.06
Deposits with Postal Dept.				104.84
Deferred expense				19.70
				31081.20
LIABILITIES				
Trust fund re: Sanctuaries and Conservation areas Balance at September 30, 1978			4483.68	
Big Gully Sanctuary				
1978 lease and taxes	788.96			
1979 lease and taxes	814.75	1603.71		
Less 1979 donations		961.00	642.71	3840.97
Grants and donations in support of special publications:				
Provincial Grants			6000.00	
Donation from Canadian Nature Federation			1000.00	
Donations from others			1554.78	8554.78
Accounts Payable: estimate for Sept. Blue Jay				3000.00
Owing re: Honoraria (Bookshop)				744.28
Owing re: Education Tax				6.08
NET WORTH				
Balance at September 30, 1978			10031.60	
Plus surplus for year ending September 30, 1979			4903.49	14935.09
				31081.20

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